FCC SAR Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	CDMA 1X/EV-DO Wireless data Terminal
BRAND NAME	:	ZTE
MODEL NAME	:	AC60
FCC ID	:	SRQ-AC60
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003 FCC OET Bulletin 65 Supplement C (Edition 01-01)

The product was completely tested on May 31, 2013. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

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Testing Laboratory
2353

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Table of Contents

1. Statement of Compliance 4
2. Administration Data 5
2.1 Testing Laboratory....5
2.2 Applicant 5
2.3 Manufacturer....5
2.4 Application Details....5
3. General Information 6
3.1 Description of Equipment Under Test (EUT) 6
3.2 Maximum RF output power among production units 7
3.3 Applied Standard....8
3.4 Device Category and SAR Limits 8
3.5 Test Conditions....8
4. Specific Absorption Rate (SAR)....9
4.1 Introduction 9
4.2 SAR Definition....9
5. SAR Measurement System....10
5.1 E-Field Probe 11
5.2 Data Acquisition Electronics (DAE) 11
5.3 Robot 12
5.4 Measurement Server....12
5.5 Phantom....13
5.6 Device Holder 13
5.7 Data Storage and Evaluation 14
5.8 Test Equipment List....16
6. Tissue Simulating Liquids....17
7. System Verification Procedures 18
7.1 Purpose of System Performance check 18
7.2 System Setup....18
7.3 SAR System Verification Results 19
8. EUT Testing Position 20
9. Measurement Procedures 21
9.1 Spatial Peak SAR Evaluation....21
9.2 Power Reference Measurement....22
9.3 Area & Zoom Scan Procedures....22
9.4 Volume Scan Procedures....23
9.5 SAR Averaged Methods 23
9.6 Power Drift Monitoring....23
10. Conducted RF Output Power (Unit: dBm)....24
11. DUT Antenna Location....26
12. SAR Test Results 28
12.1 Test Records for Hotspot SAR Test....28
12.2 Repeated SAR Measurement 29
12.3 Highest SAR Plot 30
13. Simultaneous Transmission Analysis....33
13.1 Hotspot Exposure Conditions....33
13.2 SPLSR Evaluation and Analysis 34
14. Uncertainty Assessment 35
15. References....37
Appendix A. Plots of System Performance Check
Appendix B. Plots of SAR Measurement
Appendix C. DASY Calibration Certificate
Appendix D. Test Setup Photos

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA340802	Rev. 01	Initial issue of report	Jun. 18, 2013

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION, DUT: CDMA 1X/EV-DO Wireless data Terminal, Brand Name: ZTE, Model Name: AC60,** are as follows.

<Highest Reported standalone SAR Summary>

Exposure Position	Frequency Band	Highest Reported 1g-SAR (W/kg)	Equipment Class	Highest Reported 1g-SAR (W/kg)
Hotspot (1cm Gap)	CDMA2000 BC0	1.43	PCB	1.43
	CDMA2000 BC1	1.30		
	WLAN, 2412 - 2462 MHz	0.21	DTS	0.21

<Highest Simultaneous transmission SAR>

Exposure Position	Frequency Band	Equipment Class	Highest Reported Simultaneous Transmission 1g-SAR (W/kg)
Hotspot	CDMA2000 BC0/BC1	PCB	1.48
	WLAN, 2412 - 2462 MHz	DTS	

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2003 and FCC OET Bulletin 65 Supplement C (Edition 01-01).

2. Administration Data

2.1 Testing Laboratory

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.
Test Site Location	No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-8637-9589 FAX: +86-755-8637-9595

2.2 Applicant

Company Name	ZTE CORPORATION
Address	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China

2.3 Manufacturer

Company Name	ZTE CORPORATION
Address	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China

2.4 Application Details

Date of Start during the Test	May 30, 2013
Date of End during the Test	May 31, 2013

3. General Information

3.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT	CDMA 1X/EV-DO Wireless data Terminal
Brand Name	ZTE
Model Name	AC60
FCC ID	SRQ-AC60
MEID Code	A100002388A447
Wireless Technology and Frequency Range	CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz
Mode	•CDMA2000 : 1xRTT/1xEv-Do(Rel.0)/1xEv-Do(Rev.A) •802.11b/g/n HT20
Antenna Type	WWAN: Fixed Internal Antenna WLAN: Fixed Internal Antenna
HW Version	dy7B
SW Version	VISAFONE_AC60_C21
EUT Stage	Identical Prototype
Remark: 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. 2. Voice call is not supported.	

3.2 Maximum RF output power among production units

Maximum Target power for Production Unit		
Band	CDMA2000 BC0	CDMA2000 BC1
1xRTT RC1 SO55	24	24
1xRTT RC3 SO55	24	24
1xRTT RC3 SO32(+ F-SCH)	24	24
1xRTT RC3 SO32(+SCH)	24	24
1xEVDO RTAP 153.6Kbps	24.5	24.5
1xEVDO RETAP 4096Bits	24	24

Maximum Target Average Power for Production Unit				
Mode / Band	IEEE 802.11			
	a	b	g	n-HT20
2.4 GHz WLAN		13.5	10.5	8

3.3 Applied Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC OET Bulletin 65 Supplement C (Edition 01-01)
- FCC KDB 447498 D01 v05r01
- FCC KDB 248227 D01 v01r02
- FCC KDB 941225 D01 v02
- FCC KDB 941225 D06 v01r01
- FCC KDB 865664 D01 v01

3.4 Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

3.5 Test Conditions

3.5.1 Ambient Condition

Ambient Temperature	20 to 24 ℃
Humidity	< 60 %

3.5.2 Test Configuration

For WWAN SAR testing, the device was controlled by using a base station emulator. Communication between the device and the emulator was established by air link. The distance between the EUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT.

During WLAN SAR testing EUT is configured with the WLAN continuous TX tool, and the transmission duty factor was monitored on the spectrum analyzer with zero-span setting

For WLAN SAR testing, WLAN engineering testing software installed on the EUT can provide continuous transmitting RF signal.

4. Specific Absorption Rate (SAR)

4.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

4.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific heat capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^2}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

5. SAR Measurement System

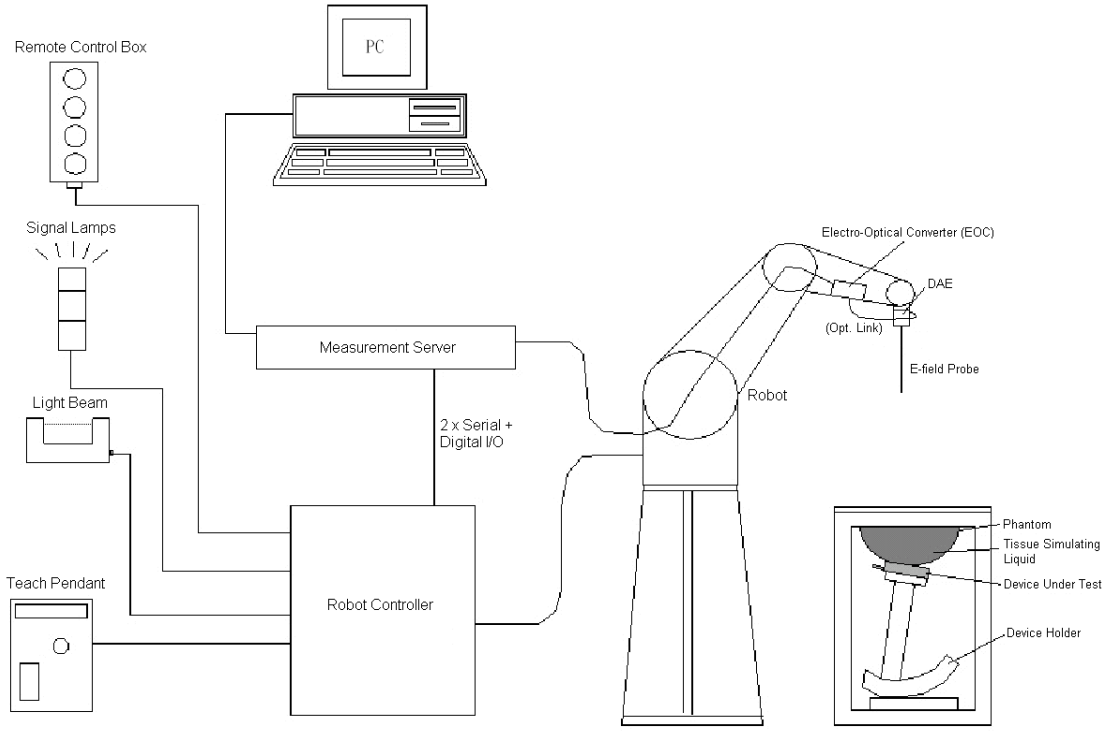


Fig 5.1 SPEAG DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY software
- Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

Component details are described in in the following sub-sections.

5.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

5.1.1 E-Field Probe Specification

<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

Fig 5.2 Photo of EX3DV4

5.1.2 E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C of this report.

5.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.3 Photo of DAE

5.3 Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Fig 5.4 Photo of DASY5

5.4 Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY5: 400 MHz, Intel Celeron), chipdisk (DASY5: 128 MB), RAM (DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

Fig 5.5 Photo of Server for DASY5

5.5 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom

Fig 5.6 Photo of SAM Phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

5.6 Device Holder

<Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

Fig 5.7 Device Holder

5.7 Data Storage and Evaluation

5.7.1 Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

5.7.2 Data Evaluation

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software：

Probe parameters：	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
Device parameters：	- Frequency	f
	- Crest factor	cf
Media parameters：	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as：

$$\mathbf{V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}}$$

with V_i = compensated signal of channel i, (i = x, y, z)
U_i = input signal of channel i, (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated：

E-field Probes：$\mathbf{E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}}$

H-field Probes：$\mathbf{H_i = \sqrt{V_i} \cdot \frac{a_{i0}+a_{i1}f+a_{i2}f^2}{f}}$

with V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), μV/(V/m)^2 for E-field Probes
ConvF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
E_i = electric field strength of channel i in V/m
H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude)：

$$\mathbf{E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}}$$

The primary field data are used to calculate the derived field units.

$$\mathbf{SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}}$$

with SAR = local specific absorption rate in mW/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

5.8 Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 18, 2011	Nov. 16, 2013
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2011	Nov. 16, 2013
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 25, 2011	Jul. 24, 2013
SPEAG	Data Acquisition Electronics	DAE4	1303	Nov. 22, 2012	Nov. 21, 2013
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Nov. 26, 2012	Nov. 25, 2013
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1670	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1671	NCR	NCR
SPEAG	Test Arch Phantom	Par phantom	1105	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Agilent	Base Station	E5515C	MY50267224	Dec. 29, 2012	Dec. 28, 2013
Agilent	ENA Series Network Analyzer	E5071C	MY46106933	Aug. 31, 2012	Aug. 30, 2013
Anritsu	Power Meter	ML2495A	1218010	Mar. 28.2013	Mar. 27, 2014
Anritsu	Power Sensor	MA2411B	1207253	Mar. 28.2013	Mar. 27, 2014
Agilent	Dual Directional Coupler	778D	50422	Note 4	
Woken	Attenuator 1	WK0602-XX	N/A	Note 4	
PE	Attenuator 2	PE7005-10	N/A	Note 4	
PE	Attenuator 3	PE7005- 3	N/A	Note 4	
Agilent	Dielectric Probe Kit	85070D	US01440205	Note 5	
AR	Power Amplifier	5S1G4M2	328767	Note 6	
R&S	Spectrum Analyzer	FSP30	100818	Aug. 22, 2012	Aug. 21, 2013

Table 5.1 Test Equipment List

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. Referring to KDB 865664 D01v01, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D835V2, SN: 4d091, D1900V2, SN: 5d118, D2450V2, SN: 736, can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.
4. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
5. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Agilent.
6. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of 1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it
7. Attenuator 1 insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.2.

Fig 6.1 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ε_r)
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7

Table 6.1 Recipes of Tissue Simulating Liquid

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an Agilent 85070D Dielectric Probe Kit and an Agilent Network Analyzer.

The following table shows the measuring results for simulating liquid.

Frequency (MHz)	Liquid Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Body	21.5	0.994	55.57	0.97	55.2	2.47	0.67	±5	May 30, 2013
1900	Body	21.3	1.501	53.849	1.52	53.3	-1.25	1.03	±5	May 30, 2013
2450	Body	21.6	1.939	53.98	1.95	52.7	-0.56	2.43	±5	May 31, 2013

Table 6.2 Measuring Results for Simulating Liquid

7. System Verification Procedures

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

7.1 Purpose of System Performance check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

7.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

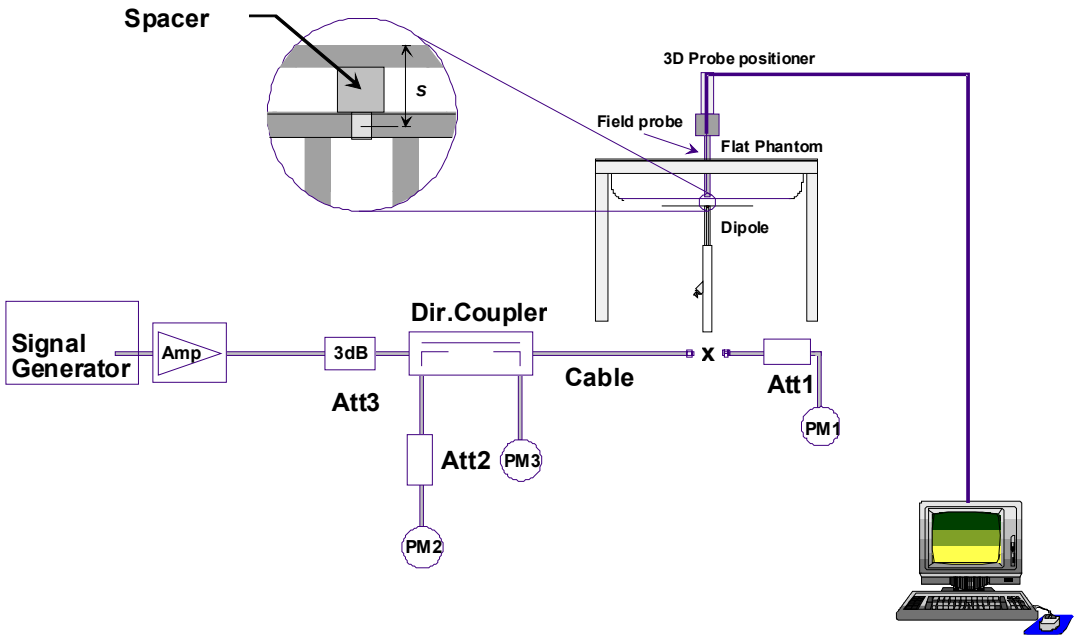


Fig 7.1 System Setup for System Evaluation

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. Calibrated Dipole

Fig 7.2 Photo of Dipole Setup

7.3 SAR System Verification Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Table 7.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Liquid Type	Power fed onto reference dipole (mW)	Targeted SAR_{1g} (W/kg)	Measured SAR_{1g} (W/kg)	Normalized SAR_{1g} (W/kg)	Deviation (%)
May 30, 2013	835	Body	250	9.42	2.36	9.44	0.21
May 30, 2013	1900	Body	250	41.8	10.2	40.8	-2.39
May 31, 2013	2450	Body	250	52.3	13.6	54.4	4.02

Table 7.1 Target and Measurement SAR after Normalized

8. EUT Testing Position

This EUT was tested in six different positions. They are Front/Back/Right Side/Left Side/Top Side/Bottom Side of the EUT with phantom 1 cm gap, as illustrated below, please refer to Appendix D for the test setup photos.

8.1 Hotspot Position

(a) To position the device parallel to the phantom surface with all sides.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device and the flat phantom to 1.0cm.

<EUT Setup Photos>

Please refer to Appendix D for the test setup photos.

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

9.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01 quoted below.

When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the area scan based *1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

9.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

9.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

10. Conducted RF Output Power (Unit: dBm)

<CDMA2000 Conducted Power>

Note:
1. Referring to KDB 941225 D01, the data device SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps). If 1xRTT and Ev-Do Rev A (RETAP 4096 bits) power is less than 1/4dB higher than Re v0, SAR tests with those settings are not necessary.
2. Referring to KDB 941225 D01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps). If 1xRTT and Ev-Do Rev A(RETAP 4096 bits) power is less than 1/4dB higher than Re v0, SAR tests with those settings are not necessary.

Band	CDMA2000 BC0			CDMA2000 BC1		
Channel	1013	384	777	25	600	1175
Frequency (MHz)	824.7	836.52	848.31	1851.25	1880.00	1908.75
1xRTT RC1+SO55	23.71	23.83	23.78	23.72	23.61	23.62
1xRTT RC3+SO55	23.82	23.85	23.81	23.73	23.62	23.69
1xRTT RC3+SO32 (+ F-SCH)	23.81	23.81	23.80	23.72	23.60	23.68
1xRTT RC3 SO32(+SCH)	23.79	23.80	23.71	23.71	23.59	23.62
1xEVDO RTAP 153.6Kbps	23.80	23.82	23.73	23.72	23.61	23.63
1xEVDO RETAP 4096Bits	23.79	23.81	23.72	23.71	23.60	23.62

<WLAN 2.4GHz 2.4GHz Band Conducted Power>

Mode	Channel	Frequency (MHz)	Average power (dBm)			
			Data Rate			
			1Mbps	2Mbps	5.5Mbps	11Mbps
802.11b	CH 1	2412	13.03	12.90	12.95	12.90
	CH 6	2437	12.31	12.51	12.58	12.53
	CH 11	2462	13.01	12.99	13.01	12.99

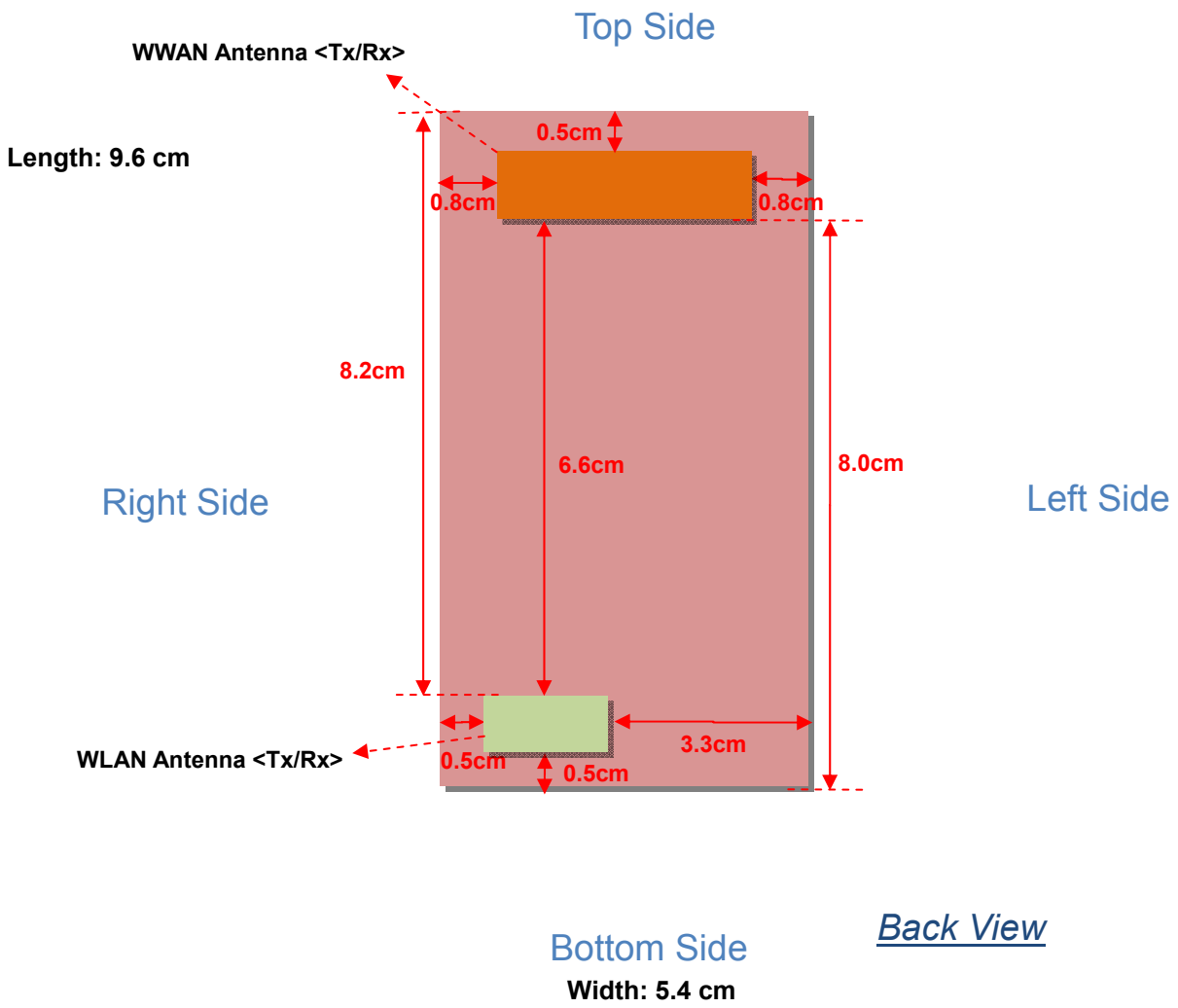
Mode	Channel	Frequency (MHz)	Average power (dBm)							
			Data Rate							
			6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
802.11g	CH 1	2412	7.17	7.18	7.20	7.27	9.95	9.96	9.95	9.98
	CH 6	2437	6.54	6.55	6.58	6.63	9.35	9.34	9.42	9.42
	CH 11	2462	6.96	6.96	6.99	7.04	9.79	9.81	9.88	9.91

Mode	Channel	Frequency (MHz)	Average power (dBm)							
			MCS Index							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n-HT20 (2.4GHz)	CH 1	2412	4.60	4.62	4.71	7.43	7.36	7.40	7.41	7.41
	CH 6	2437	4.19	4.18	4.28	6.99	6.95	6.97	7.04	6.98
	CH 11	2462	4.52	4.55	4.63	7.32	7.35	7.38	7.42	7.34

Note:

1. Per KDB 248227 D01 v01r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at the lowest data rate
3. Per KDB 248227 D01 v01r02, 11g and 11n-HT20 output power is less than 1/4dB higher than 11b mode, thus the SAR can be excluded.

11. DUT Antenna Location



Antennas	Wireless Interface
WWAN Main Antenna (Tx / Rx)	CDMA2000 BC0 CDMA 2000 BC1
WLAN Antenna (Tx / Rx)	WLAN 2.4GHz

Distance of the Antenna to the EUT surface/edge						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
WWAN Main	≤ 25mm	≤ 25mm	≤ 25mm	80mm	≤ 25mm	≤ 25mm
WLAN	≤ 25mm	≤ 25mm	82mm	≤ 25mm	≤ 25mm	33mm

Positions for SAR tests; Hotspot mode Test distance: 10 mm						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
WWAN Main	Yes	Yes	Yes	NO	Yes	Yes
WLAN	Yes	Yes	NO	Yes	Yes	NO

1. Hotspot mode SAR assessments is required.
2. Referring to KDB 941225 D06 v01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge
3. Per KDB 447498 D01v05, for handsets the *test separation distance* is determined by the smallest distance between the outer surface of the device and the user; which is 10mm for hotspot SAR.

12. SAR Test Results

Note:

1. Per KDB 447498 D01v05, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   Reported SAR(W/kg)= Measured SAR(W/kg) Scaling Factor*
2. Per KDB 447498 D01v05, for each exposure position, if the highest output channel reported SAR ≤0.8W/kg, other channels SAR testing is not necessary.
3. Additional WLAN SAR testing was performed for simultaneous transmission analysis
4. For Hotspot SAR testing, per KDB 941225 D06, for EUT dimension ≥ 9cm*5cm, the test distance is 1cm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.

12.1 Test Records for Hotspot SAR Test

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
1	CDMA2000 BC0	RTAP 153.6	Front	1	384	836.52	23.82	24.5	1.169	-0.07	1.170	1.368
2	CDMA2000 BC0	RTAP 153.6	Back	1	384	836.52	23.82	24.5	1.169	-0.03	1.080	1.263
3	CDMA2000 BC0	RTAP 153.6	Left Side	1	384	836.52	23.82	24.5	1.169	-0.01	0.644	0.753
4	CDMA2000 BC0	RTAP 153.6	Right Side	1	384	836.52	23.82	24.5	1.169	-0.07	0.667	0.780
5	CDMA2000 BC0	RTAP 153.6	Top Side	1	384	836.52	23.82	24.5	1.169	-0.08	0.112	0.131
6	**CDMA2000 BC0**	**RTAP 153.6**	**Front**	**1**	**1013**	**824.7**	**23.8**	**24.5**	**1.175**	**0.05**	**1.220**	**1.433**
7	CDMA2000 BC0	RTAP 153.6	Front	1	777	848.31	23.73	24.5	1.194	0.09	1.000	1.194
8	CDMA2000 BC0	RTAP 153.6	Back	1	1013	824.7	23.8	24.5	1.175	-0.01	1.100	1.292
9	CDMA2000 BC0	RTAP 153.6	Back	1	777	848.31	23.73	24.5	1.194	-0.16	0.942	1.125
11	CDMA2000 BC1	RTAP 153.6	Front	1	25	1851.25	23.72	24.5	1.197	-0.04	0.898	1.075
12	CDMA2000 BC1	RTAP 153.6	Back	1	25	1851.25	23.72	24.5	1.197	-0.01	1.030	1.233
13	CDMA2000 BC1	RTAP 153.6	Left Side	1	25	1851.25	23.72	24.5	1.197	0.04	0.226	0.270
14	CDMA2000 BC1	RTAP 153.6	Right Side	1	25	1851.25	23.72	24.5	1.197	0.10	0.440	0.527
15	CDMA2000 BC1	RTAP 153.6	Top Side	1	25	1851.25	23.72	24.5	1.197	-0.01	0.823	0.985
16	CDMA2000 BC1	RTAP 153.6	Front	1	600	1880	23.61	24.5	1.227	0.04	0.868	1.065
17	CDMA2000 BC1	RTAP 153.6	Front	1	1175	1908.75	23.63	24.5	1.222	0.01	0.983	1.201
18	CDMA2000 BC1	RTAP 153.6	Back	1	600	1880	23.61	24.5	1.227	-0.04	1.000	1.227
19	**CDMA2000 BC1**	**RTAP 153.6**	**Back**	**1**	**1175**	**1908.75**	**23.63**	**24.5**	**1.222**	**-0.11**	**1.060**	**1.295**
20	CDMA2000 BC1	RTAP 153.6	Top Side	1	600	1880	23.61	24.5	1.227	-0.04	0.748	0.918
21	CDMA2000 BC1	RTAP 153.6	Top Side	1	1175	1908.75	23.63	24.5	1.222	-0.03	0.817	0.998

<WLAN2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Data Rate (bps)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
23	**WLAN 2.4GHz**	**802.11b**	**Front**	**1**	**1**	**2412**	**1M**	**13.03**	**13.5**	**1.114**	**-0.05**	**0.187**	**0.208**
24	WLAN 2.4GHz	802.11b	Back	1	1	2412	1M	13.03	13.5	1.114	0.09	0.166	0.185
26	WLAN 2.4GHz	802.11b	Right Side	1	1	2412	1M	13.03	13.5	1.114	0.08	0.094	0.105
27	WLAN 2.4GHz	802.11b	Bottom Side	1	1	2412	1M	13.03	13.5	1.114	-0.18	0.070	0.078

12.2 Repeated SAR Measurement

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	SAR_{1g} (W/kg)	Scaled SAR_{1g} (W/kg)
6	CDMA2000 BC0	RTAP 153.6	Front	1	1013	824.7	23.8	24.5	1.175	0.05	1.220	1.433
10	CDMA2000 BC0	RTAP 153.6	Front	1	1013	824.7	23.8	24.5	1.175	0.01	1.200	1.410
19	CDMA2000 BC1	RTAP 153.6	Back	1	1175	1908.75	23.63	24.5	1.222	-0.11	1.060	1.295
22	CDMA2000 BC1	RTAP 153.6	Back	1	1175	1908.75	23.63	24.5	1.222	-0.08	1.020	1.246

Note:

1. Per KDB 865664 D01v01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg
2. Per KDB 865664 D01v01, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

12.3 Highest SAR Plot

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

06 CDMA2000 BC0_RTAP 153.6_Front_lcm_Ch1013

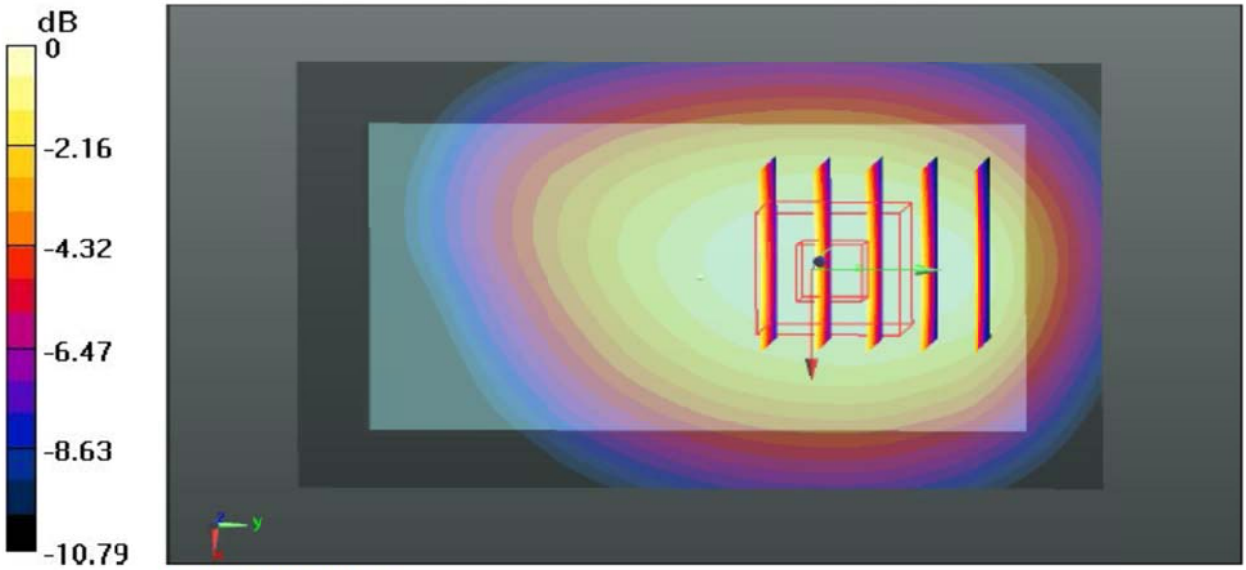
DUT: 340802

Communication System: CDMA2000; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 825 MHz; σ = 0.985 mho/m; ε_r = 55.653; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1013/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.50 W/kg

Ch1013/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 38.815 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.596 mW/g
SAR(1 g) = 1.220 mW/g; SAR(10 g) = 0.883 mW/g
Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.43 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

19 CDMA2000 BC1_RTAP 153.6_Back_1cm_Ch1175

DUT: 340802

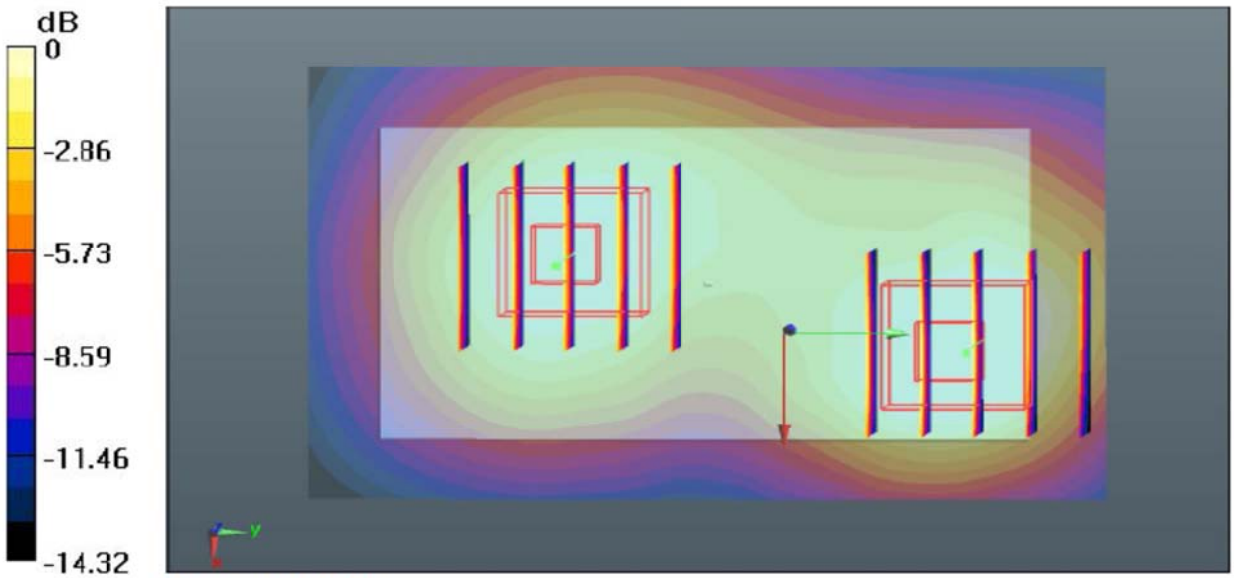
Communication System: CDMA2000; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1909 MHz; σ = 1.51 mho/m; ε_r = 53.822; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1175/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.49 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.665 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.888 mW/g
SAR(1 g) = 1.060 mW/g; SAR(10 g) = 0.574 mW/g
Maximum value of SAR (measured) = 1.45 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.665 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.298 mW/g
SAR(1 g) = 0.842 mW/g; SAR(10 g) = 0.524 mW/g
Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.08 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 31.05.2013

23 WLAN2.4G_802.11b_Front_1cm_Ch1

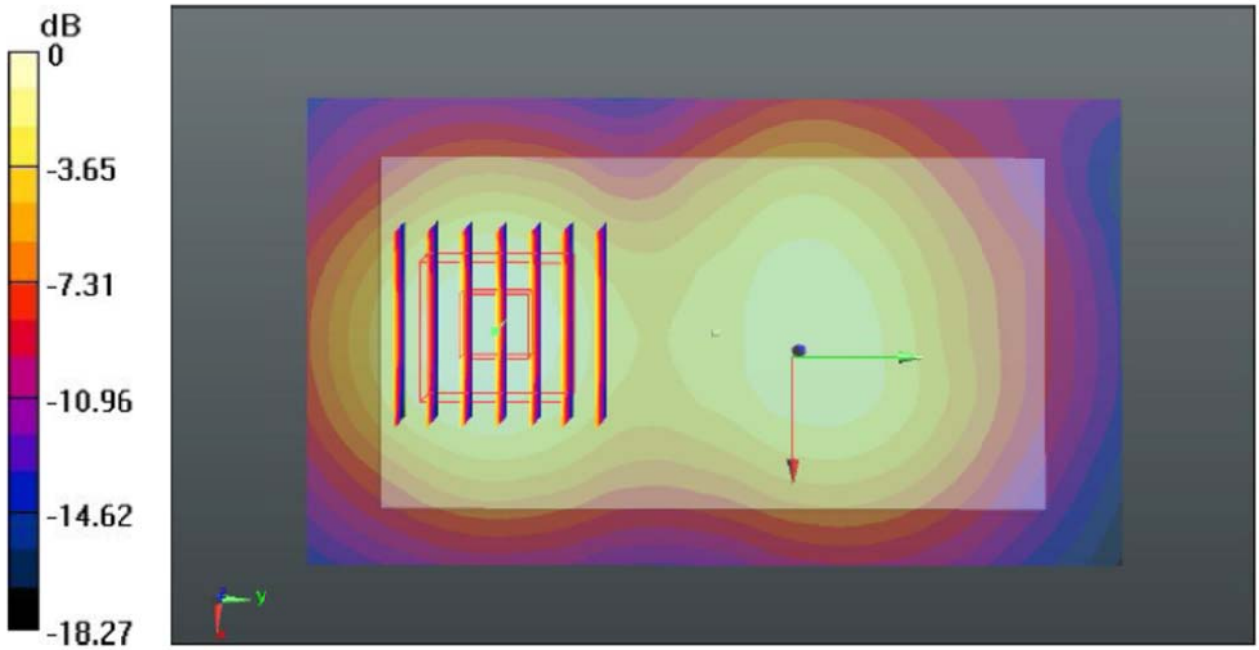
DUT: 340802

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130531 Medium parameters used: f = 2412 MHz; σ = 1.87 mho/m; ε_r = 54.093; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1/Area Scan (61x101x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.265 W/kg

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.850 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.337 mW/g
SAR(1 g) = 0.187 mW/g; SAR(10 g) = 0.103 mW/g
Maximum value of SAR (measured) = 0.261 W/kg



0 dB = 0.261 W/kg

13. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Phone			Note
		Head	Hotspot	Body	
1.	CDMA(Data) + WLAN2.4GHz(data)	-	Yes	-	2.4GHz Hotspot

Note:

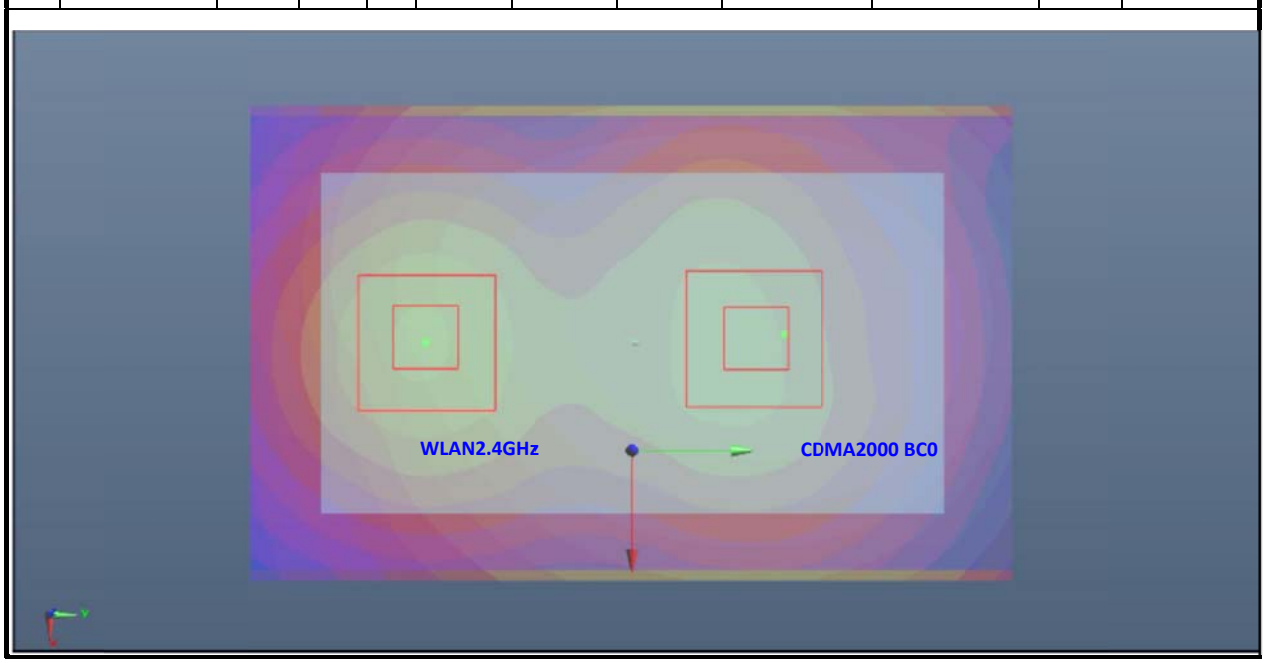
1. 1xRTT and EVDO share the same antenna, and no SVDO feature in this device.
2. If 1g-SAR scalar summation ≥1.6 W/kg, SPLSR calculation is necessary.
3. The reported SAR summation is calculated based on the same configuration and test position.
4. Per KDB 447498 D01v05, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*), and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan
   If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
   iii) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg

13.1 Hotspot Exposure Conditions

Position	WWAN (PCB)			WLAN 2.4GHz (DTS)		WWAN + WLAN 2.4GHz (W/kg)	SPLSR ≤ 0.04	Case No
	WWAN Band	Plot No	Max. WWAN SAR (W/kg)	Plot No	Max. WLAN 2.4GHz SAR (W/kg)			
Front	CDMA2000 BC0	6	1.433	23	0.208	**1.64**	0.04	#1
	CDMA2000 BC1	17	1.201	23	0.208	**1.41**	-	-
Back	CDMA2000 BC0	8	1.292	24	0.185	**1.48**	-	-
	CDMA2000 BC1	19	1.295	24	0.185	**1.48**	-	-
Left Side	CDMA2000 BC0	3	0.753			**0.75**	-	-
	CDMA2000 BC1	13	0.270			**0.27**	-	-
Right Side	CDMA2000 BC0	4	0.780	26	0.105	**0.89**	-	-
	CDMA2000 BC1	14	0.527	26	0.105	**0.63**	-	-
Top Side	CDMA2000 BC0	5	0.131			**0.13**	-	-
	CDMA2000 BC1	21	0.998			**1.00**	-	-
Bottom Side	CDMA2000 BC0			27	0.078	**0.08**	-	-
	CDMA2000 BC1			27	0.078	**0.08**	-	-

13.2 SPLSR Evaluation and Analysis

Case No #1 Plot No	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Pair SAR sum (W/kg)	SPLSR	Simultaneous SAR
					X	Y	Z				
6	CDMA2000 BC0	Front	1.433	1	-0.0195	0.017	-0.206	49.5	1.64	0.04	Not required
23	802.11b		0.208	1	-0.017	-0.0324	-0.206				



Remark: Per KDB 447498 D01v05, if SPLSR ≤ 0.04, further evaluation is not required.

Test Engineer： Krin Wu

14. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in Table 12.1

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 14.1 Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 14.2 Uncertainty Budget for frequency range 300 MHz to 3 GHz

15. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003

[4] FCC OET Bulletin 65 (Edition 97-01) Supplement C (Edition 01-01), “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”, June 2001

[5] SPEAG DASY System Handbook

[6] FCC KDB 248227 D01 v01r02, “SAR Measurement Procedures for 802.11 a/b/g Transmitters”, May 2007

[7] FCC KDB 447498 D01 v05r01, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, May 2013

[8] FCC KDB 941225 D01 v02, “SAR Measurement Procedures for 3G Devices – CDMA 2000 / Ev-Do / WCDMA / HSDPA / HSPA”, October 2007

[9] FCC KDB 941225 D06 v01r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", May 2013

[10] FCC KDB 865664 D01 v01, “SAR Measurement Requirements for 100MHz to 6 GHz”, October 2012

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

System Check_Body_835MHz_130530

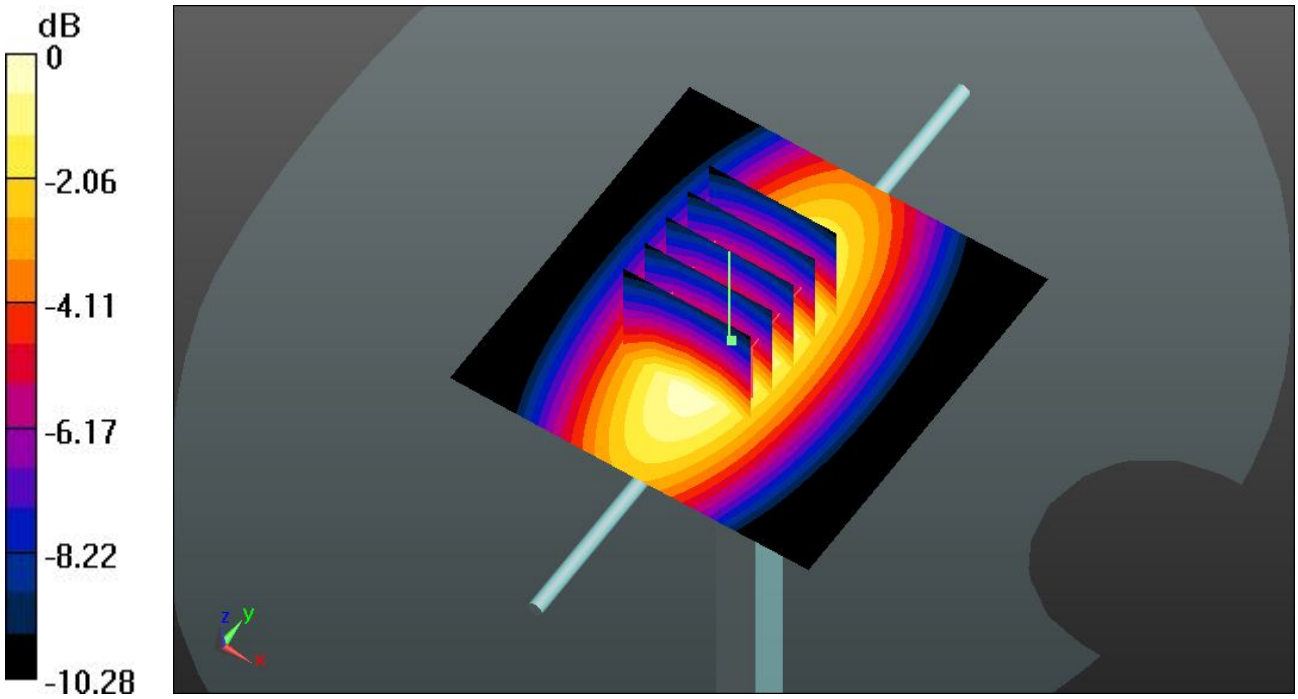
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 835 MHz; σ = 0.994 mho/m; ε_r = 55.57; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.55 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.614 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 3.469 mW/g
SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.56 mW/g
Maximum value of SAR (measured) = 2.53 W/kg



0 dB = 2.53 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

System Check_Body_1900MHz_130530

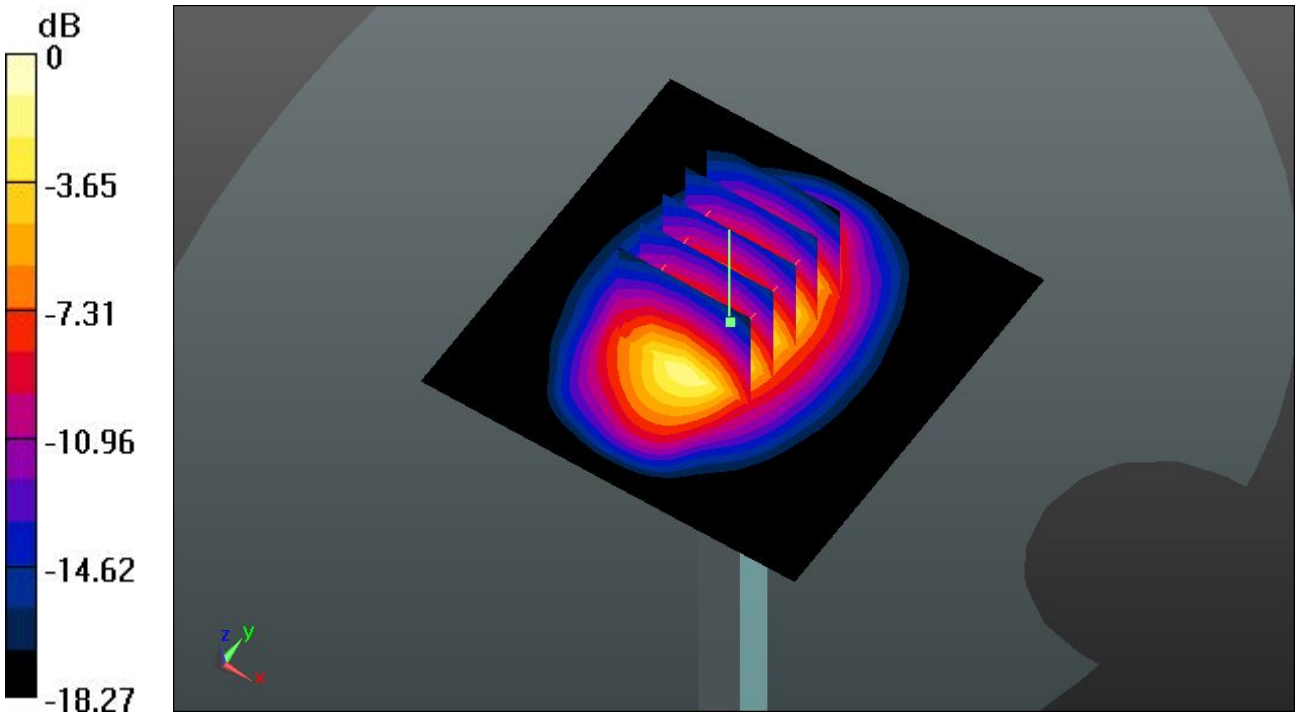
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1900 MHz; σ = 1.501 mho/m; ε_r = 53.849; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 86.965 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.476 mW/g
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.29 mW/g
Maximum value of SAR (measured) = 14.6 W/kg



0 dB = 14.6 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 31.05.2013

System Check_Body_2450MHz_130531

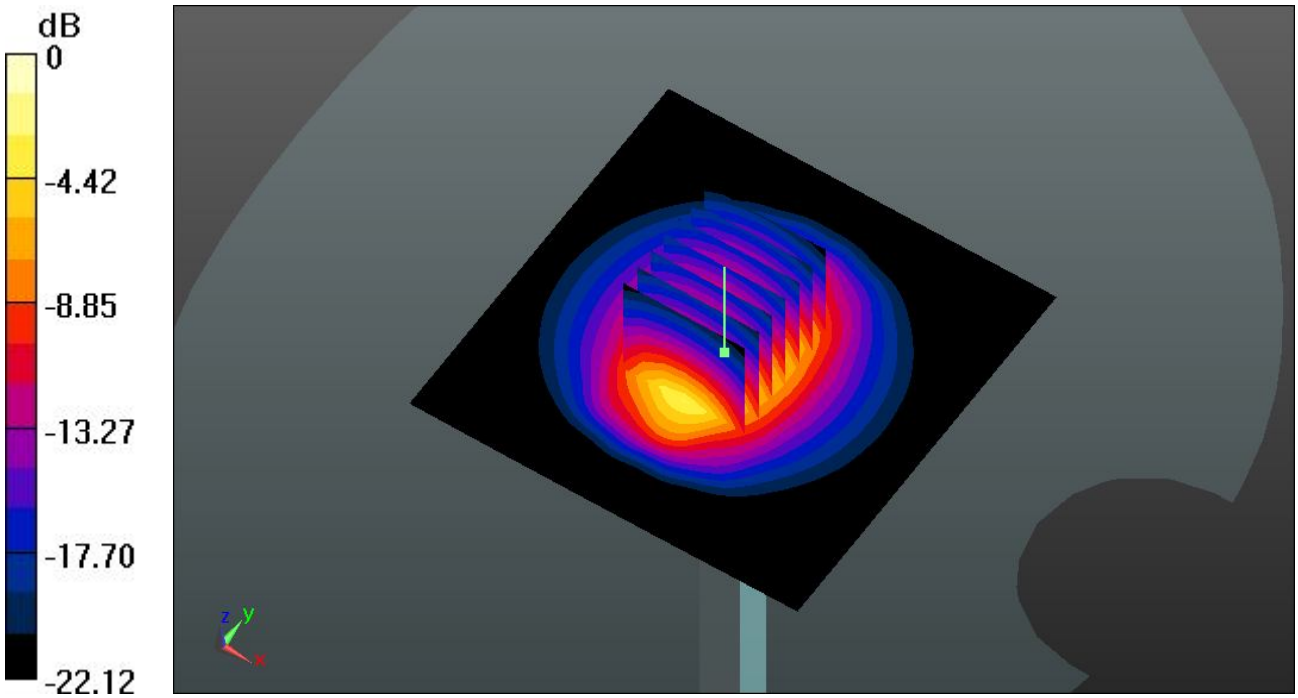
DUT: D2450V2 - SN:736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130531 Medium parameters used: f = 2450 MHz; σ = 1.939 mho/m; ε_r = 53.98; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 20.9 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.812 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 28.482 mW/g
SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.22 mW/g
Maximum value of SAR (measured) = 20.9 W/kg



0 dB = 20.9 W/kg

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

01 CDMA2000 BC0_RTAP 153.6_Front_1cm_Ch384

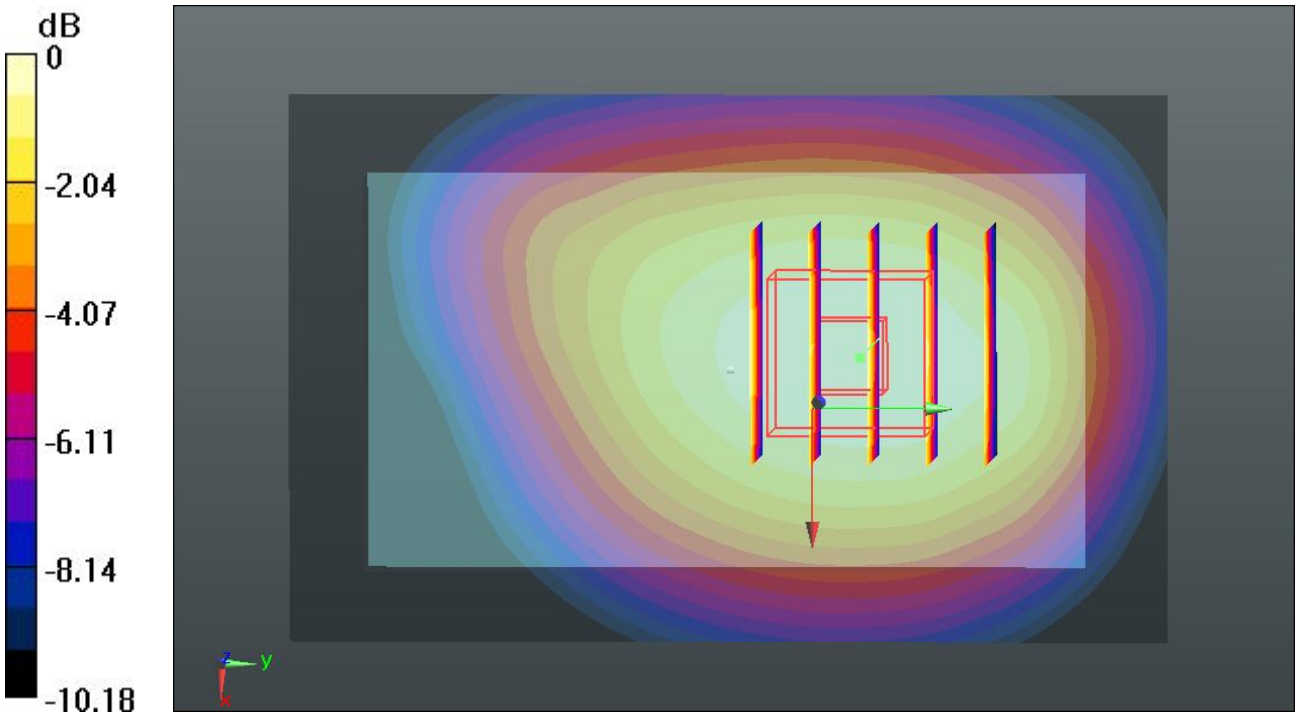
DUT: 340802

Communication System: CDMA2000; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.554; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch384/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.40 W/kg

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 38.157 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.524 mW/g
SAR(1 g) = 1.170 mW/g; SAR(10 g) = 0.845 mW/g
Maximum value of SAR (measured) = 1.37 W/kg



0 dB = 1.37 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

02 CDMA2000 BC0_RTAP 153.6_Back_1cm_Ch384

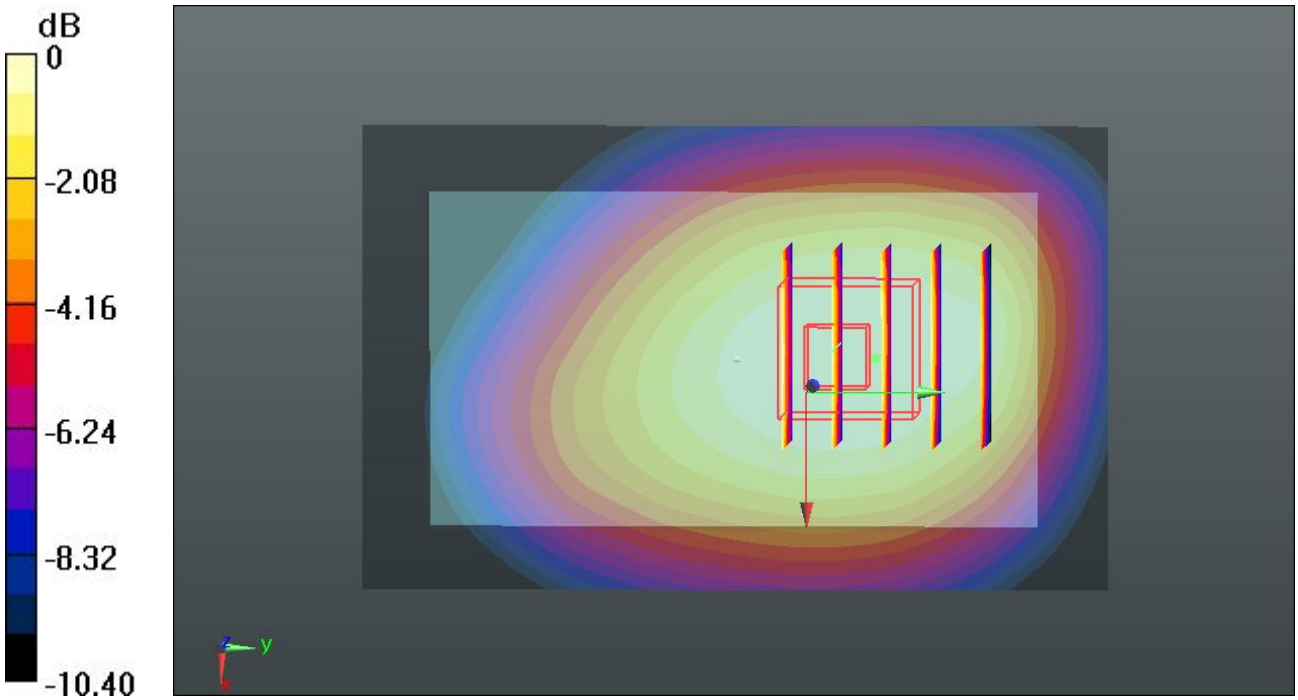
DUT: 340802

Communication System: CDMA2000; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.554; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch384/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.34 W/kg

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.370 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.401 mW/g
SAR(1 g) = 1.080 mW/g; SAR(10 g) = 0.791 mW/g
Maximum value of SAR (measured) = 1.26 W/kg



0 dB = 1.26 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

03 CDMA2000 BC0_RTAP 153.6_Left Side_1cm_Ch384

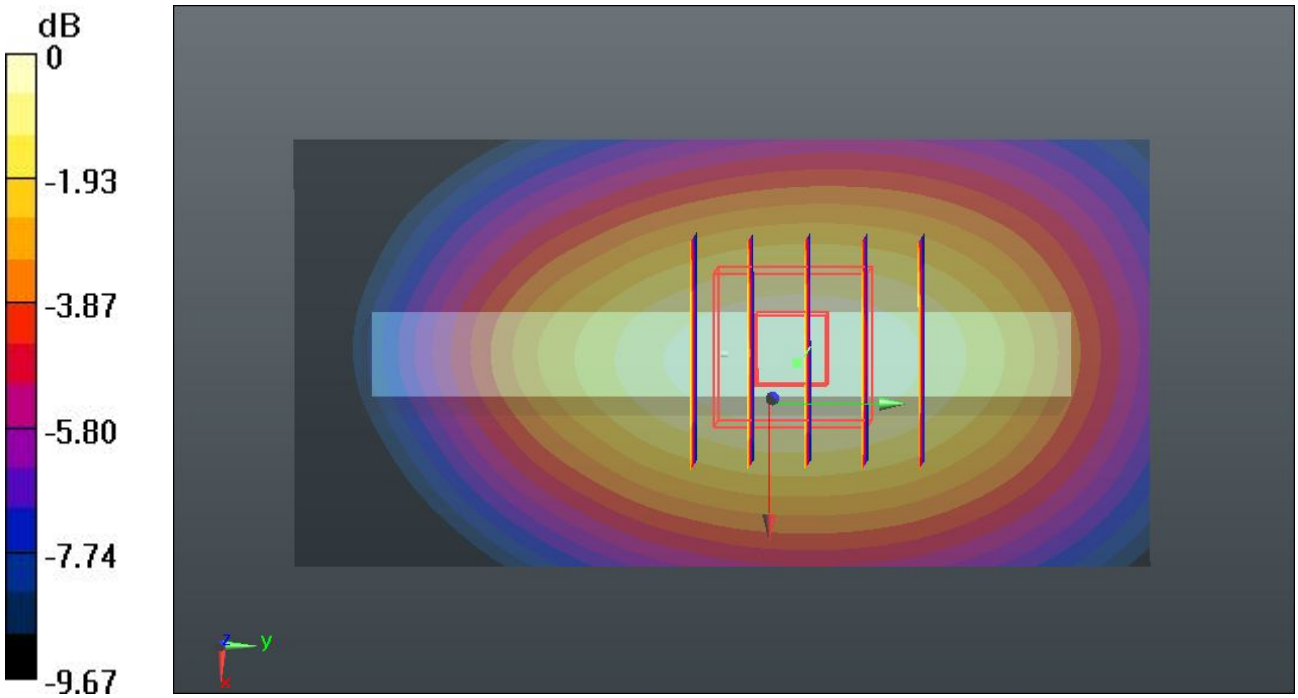
DUT: 340802

Communication System: CDMA2000; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.554; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch384/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.794 W/kg

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.655 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.896 mW/g
SAR(1 g) = 0.644 mW/g; SAR(10 g) = 0.448 mW/g
Maximum value of SAR (measured) = 0.783 W/kg



0 dB = 0.783 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

04 CDMA2000 BC0_RTAP 153.6_Right Side_1cm_Ch384

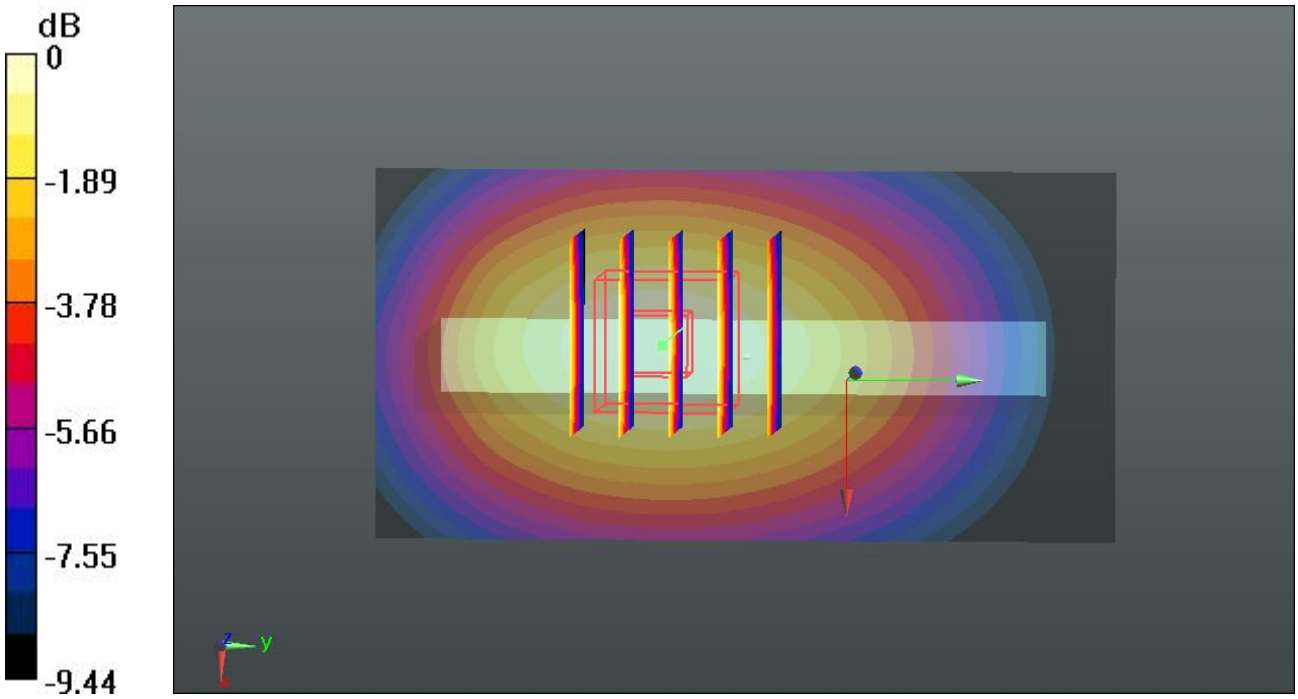
DUT: 340802

Communication System: CDMA2000; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.554; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch384/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.813 W/kg

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.250 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.921 mW/g
SAR(1 g) = 0.667 mW/g; SAR(10 g) = 0.467 mW/g
Maximum value of SAR (measured) = 0.806 W/kg



0 dB = 0.806 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

05 CDMA2000 BC0_RTAP 153.6_Top Side_1cm_Ch384

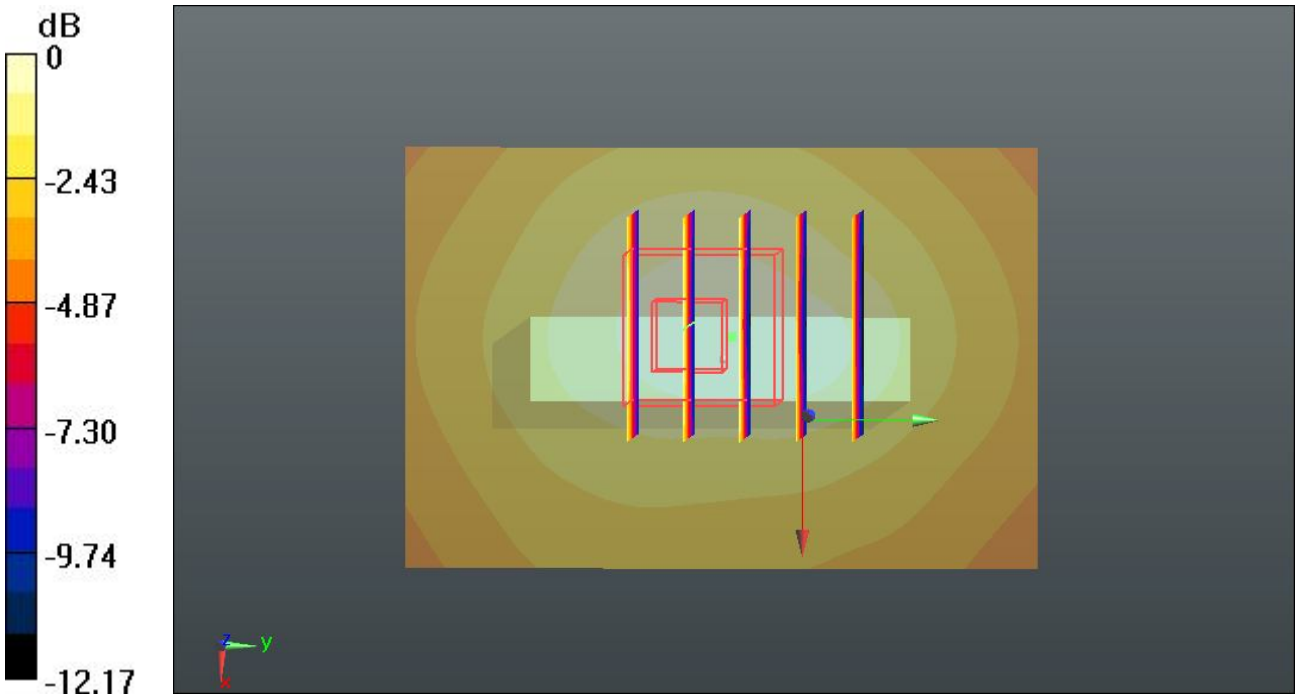
DUT: 340802

Communication System: CDMA2000; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.554; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch384/Area Scan (41x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.156 W/kg

Ch384/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.710 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.202 mW/g
SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.071 mW/g
Maximum value of SAR (measured) = 0.152 W/kg



0 dB = 0.152 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

06 CDMA2000 BC0_RTAP 153.6_Front_1cm_Ch1013

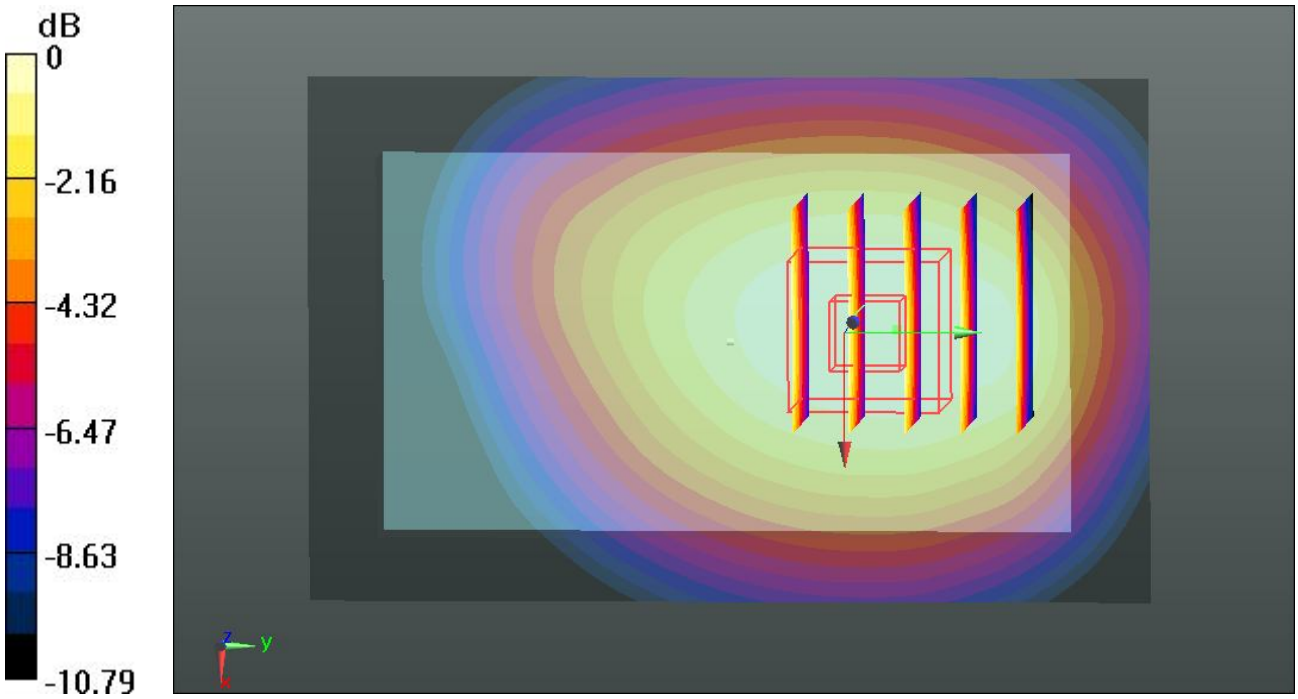
DUT: 340802

Communication System: CDMA2000; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 825 MHz; σ = 0.985 mho/m; ε_r = 55.653; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1013/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.50 W/kg

Ch1013/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 38.815 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.596 mW/g
SAR(1 g) = 1.220 mW/g; SAR(10 g) = 0.883 mW/g
Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.43 W/kg

10 CDMA2000 BC0_RTAP 153.6_Front_1cm_Ch1013_Repeat SAR

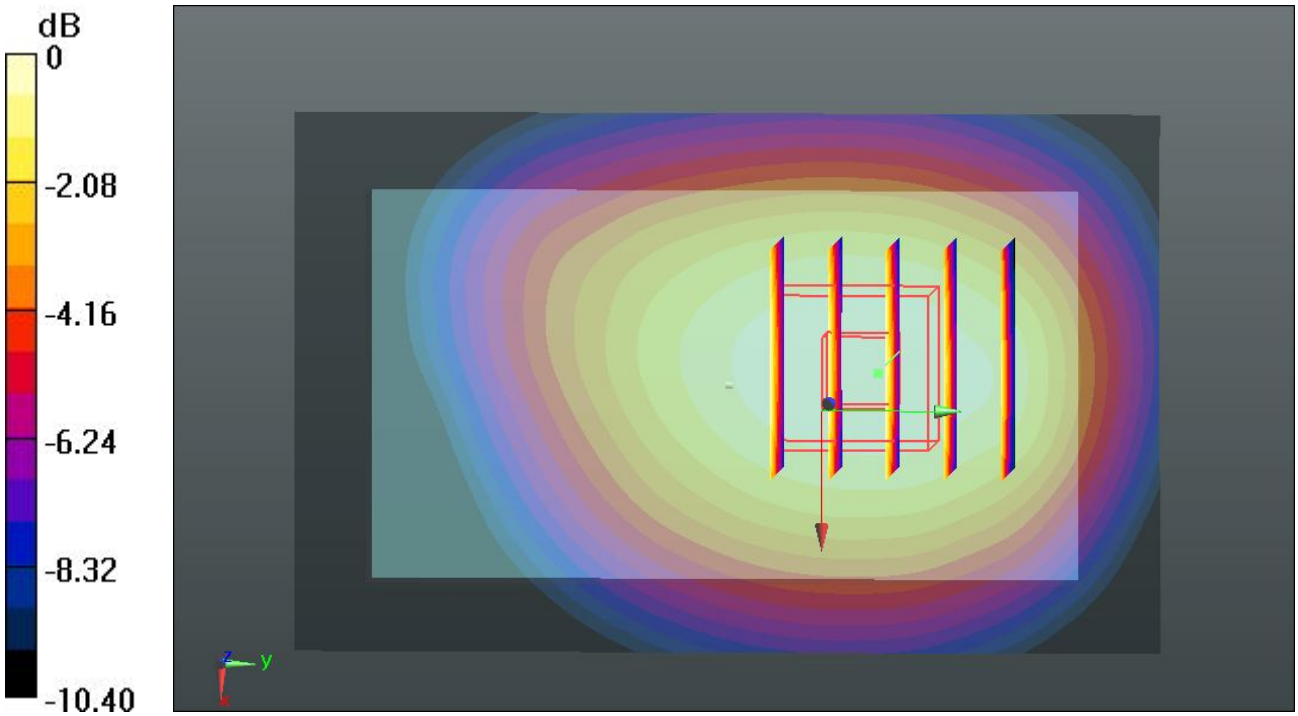
DUT: 340802

Communication System: CDMA2000; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 825 MHz; σ = 0.985 mho/m; ε_r = 55.653; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1013/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.42 W/kg

Ch1013/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 38.501 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.563 mW/g
SAR(1 g) = 1.200 mW/g; SAR(10 g) = 0.866 mW/g
Maximum value of SAR (measured) = 1.40 W/kg



0 dB = 1.40 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

07 CDMA2000 BC0_RTAP 153.6_Front_1cm_Ch777

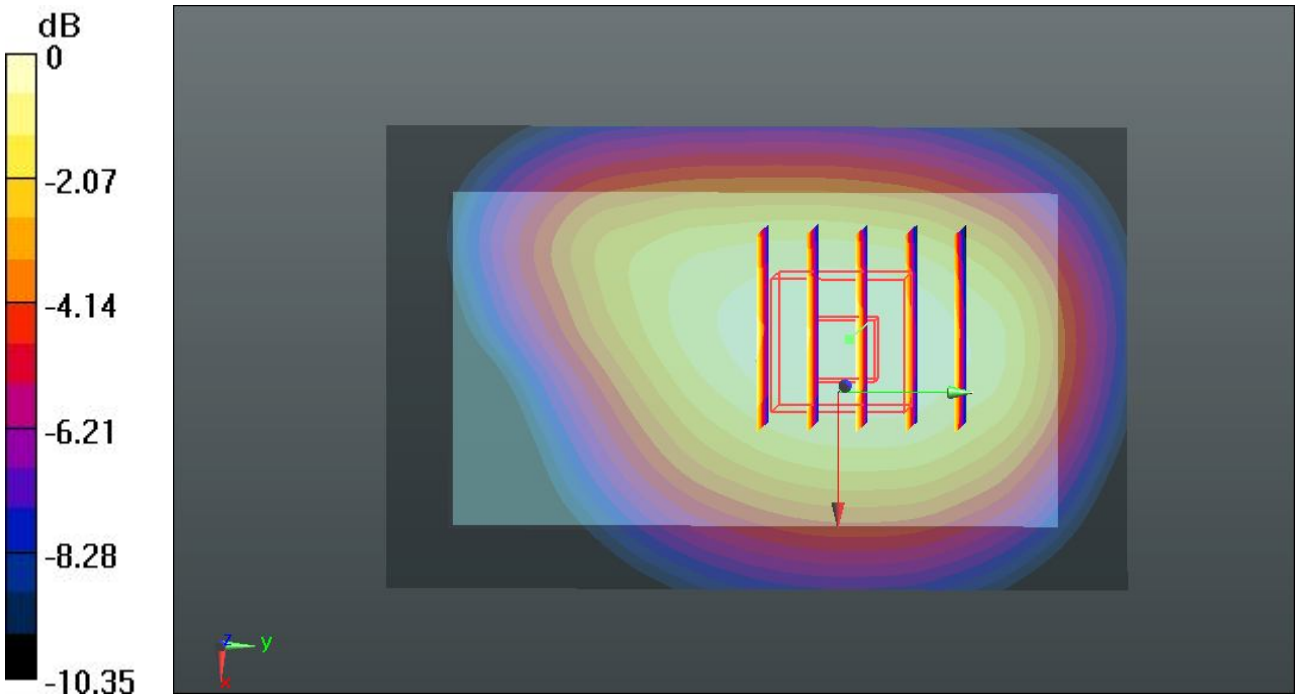
DUT: 340802

Communication System: CDMA2000; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 848.31 MHz; σ = 1.006 mho/m; ε_r = 55.451; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch777/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Ch777/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.838 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.316 mW/g
SAR(1 g) = 1.000 mW/g; SAR(10 g) = 0.725 mW/g
Maximum value of SAR (measured) = 1.17 W/kg



0 dB = 1.17 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

08 CDMA2000 BC0_RTAP 153.6_Back_1cm_Ch1013

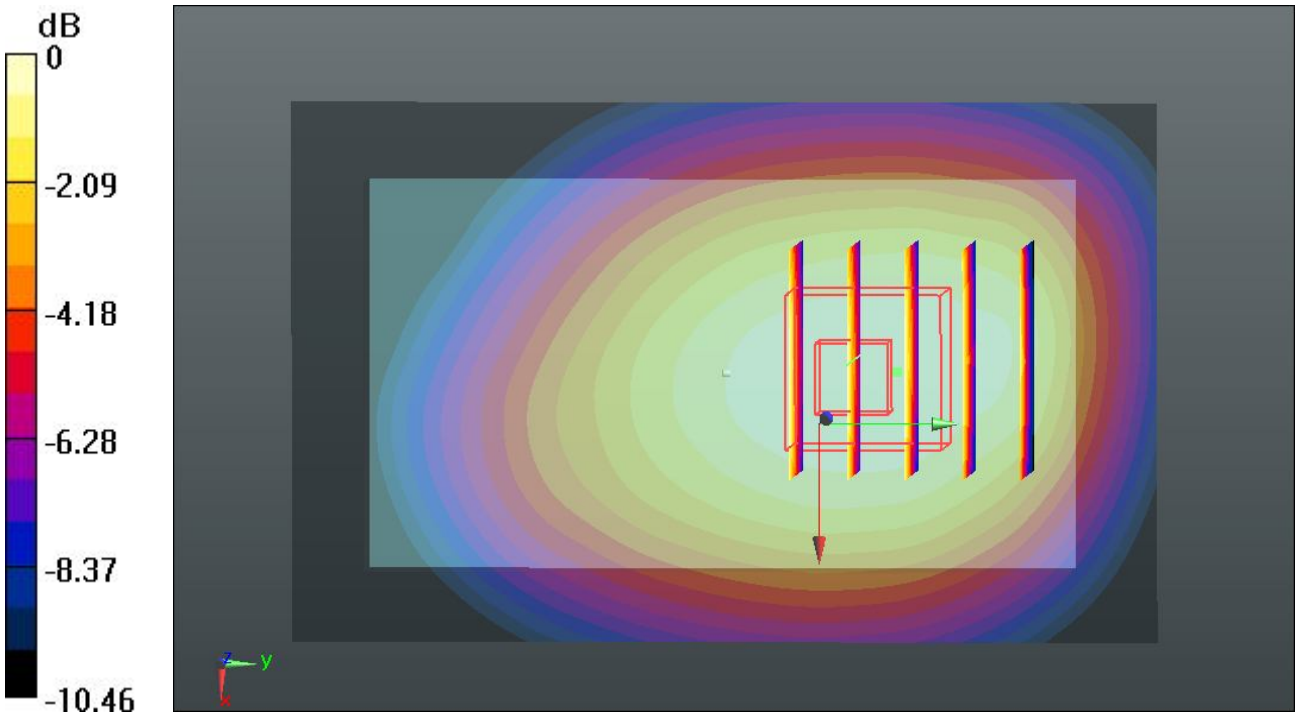
DUT: 340802

Communication System: CDMA2000; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 825 MHz; σ = 0.985 mho/m; ε_r = 55.653; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1013/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.32 W/kg

Ch1013/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.429 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.424 mW/g
SAR(1 g) = 1.100 mW/g; SAR(10 g) = 0.801 mW/g
Maximum value of SAR (measured) = 1.28 W/kg



0 dB = 1.28 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

09 CDMA2000 BC0_RTAP 153.6_Back_1cm_Ch777

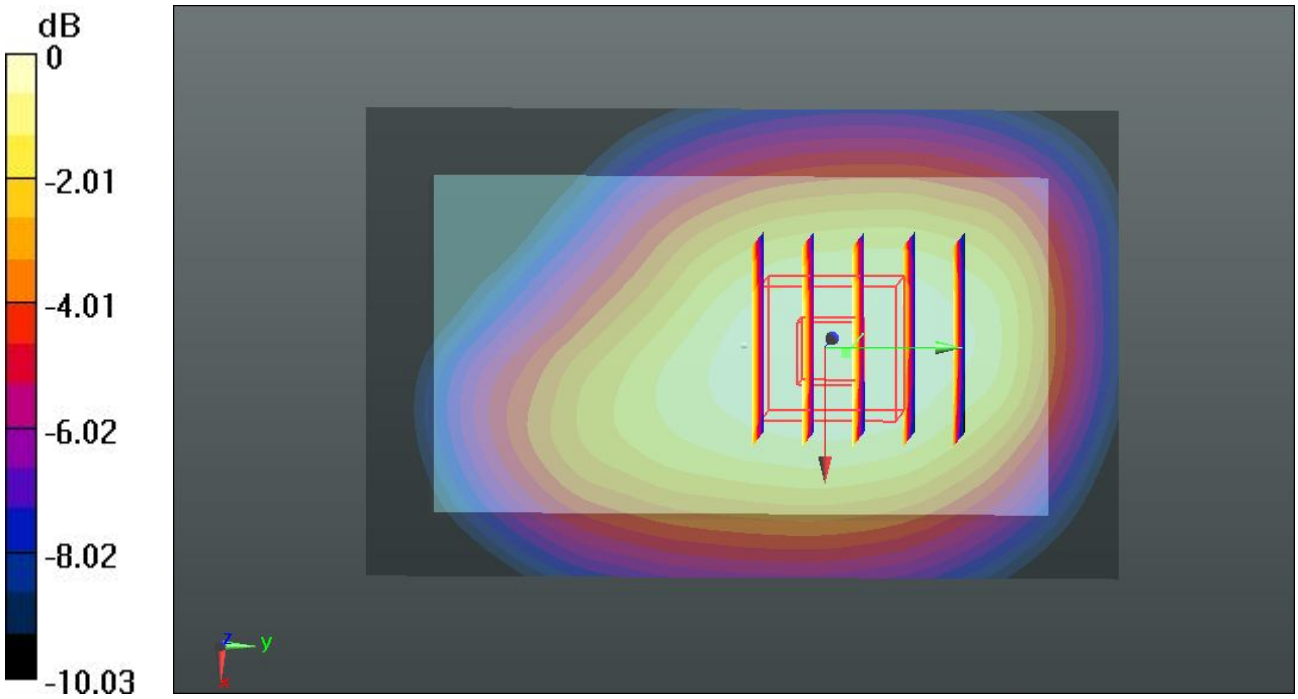
DUT: 340802

Communication System: CDMA2000; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium: MSL_835_130530 Medium parameters used: f = 848.31 MHz; σ = 1.006 mho/m; ε_r = 55.451; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch777/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.15 W/kg

Ch777/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.186 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.224 mW/g
SAR(1 g) = 0.942 mW/g; SAR(10 g) = 0.687 mW/g
Maximum value of SAR (measured) = 1.10 W/kg



0 dB = 1.10 W/kg

11 CDMA2000 BC1_RTAP 153.6_Front_1cm_Ch25

DUT: 340802

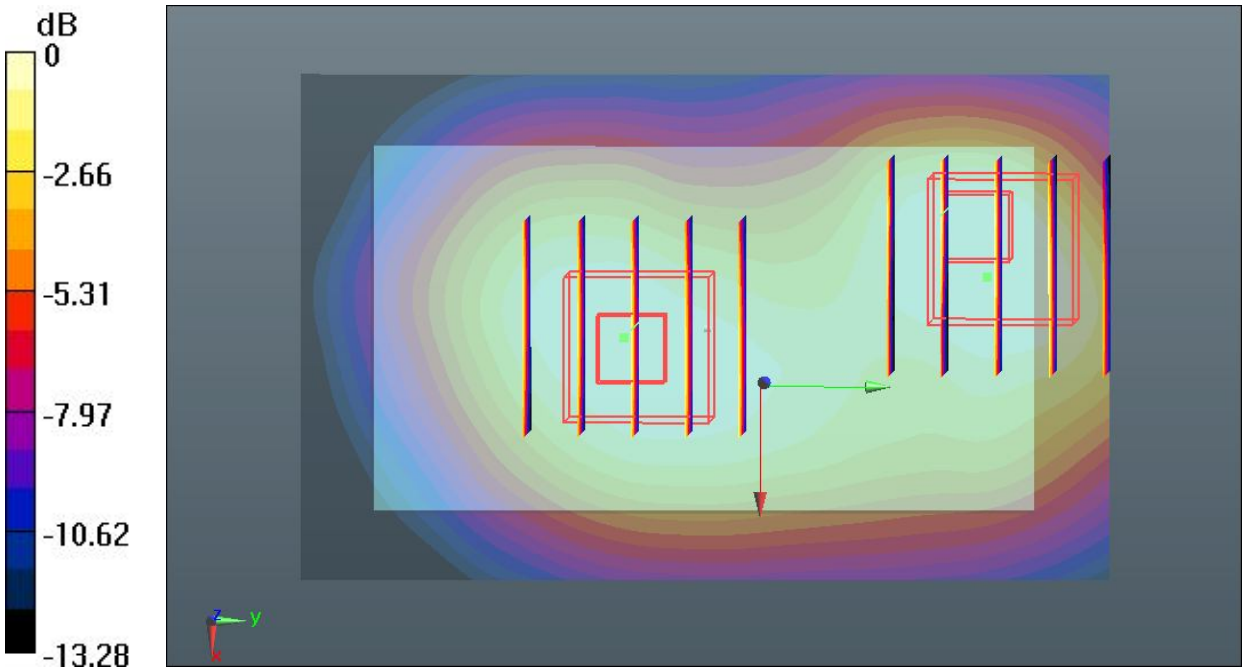
Communication System: CDMA2000; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1851.25 MHz; σ = 1.442 mho/m; ε_r = 53.85; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch25/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.30 W/kg

Ch25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.420 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.503 mW/g
SAR(1 g) = 0.898 mW/g; SAR(10 g) = 0.511 mW/g
Maximum value of SAR (measured) = 1.19 W/kg

Ch25/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.420 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.261 mW/g
SAR(1 g) = 0.847 mW/g; SAR(10 g) = 0.544 mW/g
Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

12 CDMA2000 BC1_RTAP 153.6_Back_1cm_Ch25

DUT: 340802

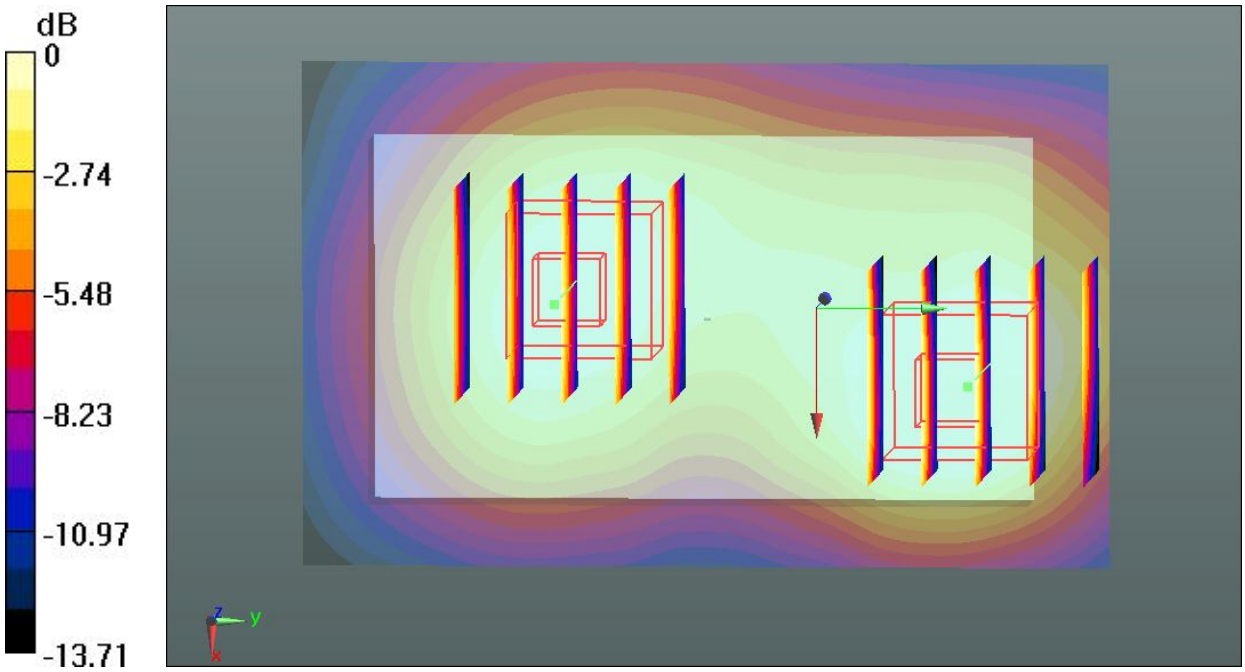
Communication System: CDMA2000; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1851.25 MHz; σ = 1.442 mho/m; ε_r = 53.85; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch25/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.47 W/kg

Ch25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.940 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.816 mW/g
SAR(1 g) = 1.030 mW/g; SAR(10 g) = 0.569 mW/g
Maximum value of SAR (measured) = 1.41 W/kg

Ch25/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.940 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.170 mW/g
SAR(1 g) = 0.783 mW/g; SAR(10 g) = 0.498 mW/g
Maximum value of SAR (measured) = 0.995 W/kg



0 dB = 0.995 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

13 CDMA2000 BC1_RTAP 153.6_Left Side_1cm_Ch25

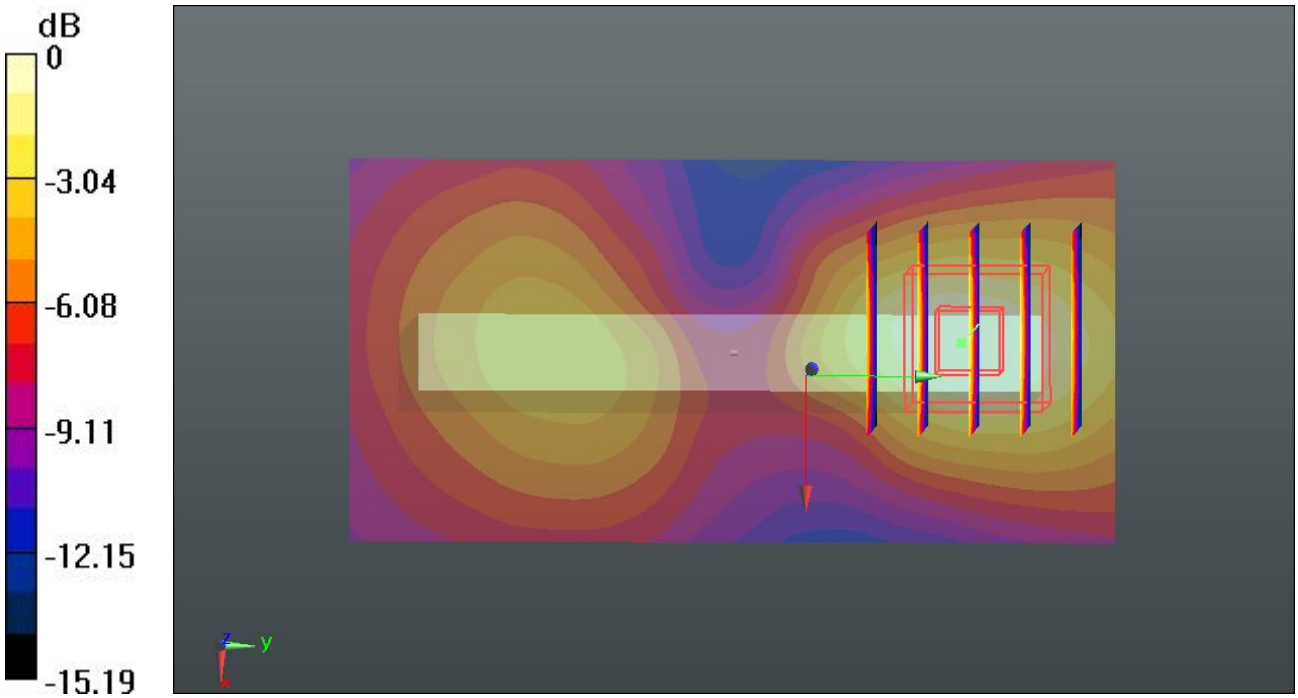
DUT: 340802

Communication System: CDMA2000; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1851.25 MHz; σ = 1.442 mho/m; ε_r = 53.85; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch25/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.324 W/kg

Ch25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.731 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.367 mW/g
SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.130 mW/g
Maximum value of SAR (measured) = 0.299 W/kg



0 dB = 0.299 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

14 CDMA2000 BC1_RTAP 153.6_Right Side_1cm_Ch25

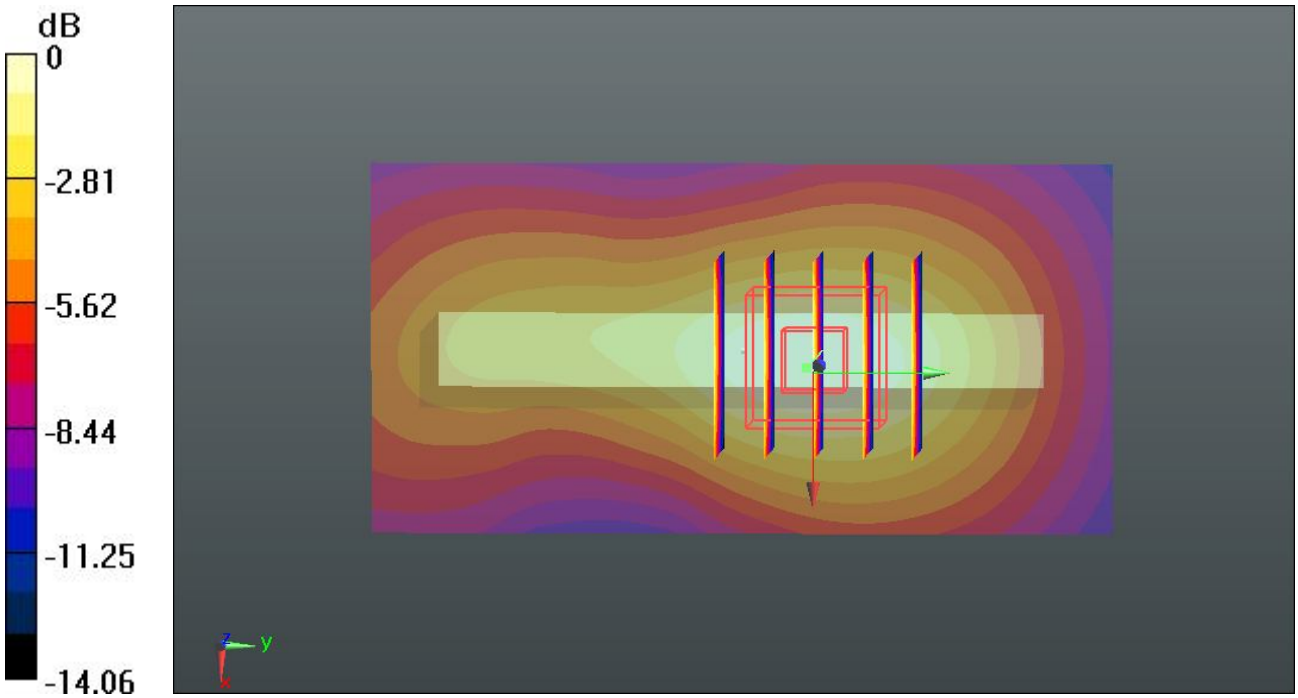
DUT: 340802

Communication System: CDMA2000; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1851.25 MHz; σ = 1.442 mho/m; ε_r = 53.85; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch25/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.589 W/kg

Ch25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.310 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.710 mW/g
SAR(1 g) = 0.440 mW/g; SAR(10 g) = 0.267 mW/g
Maximum value of SAR (measured) = 0.585 W/kg



0 dB = 0.585 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

15 CDMA2000 BC1_RTAP 153.6_Top Side_1cm_Ch25

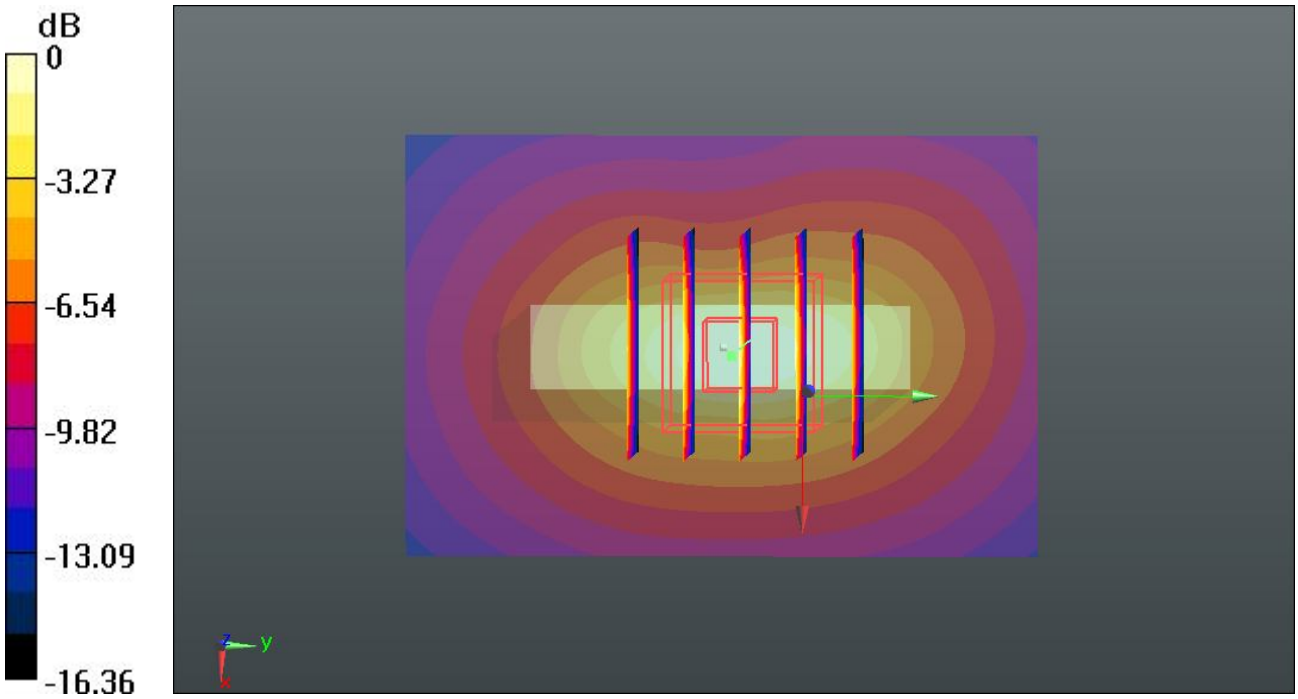
DUT: 340802

Communication System: CDMA2000; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1851.25 MHz; σ = 1.442 mho/m; ε_r = 53.85; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch25/Area Scan (41x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.16 W/kg

Ch25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.652 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.414 mW/g
SAR(1 g) = 0.823 mW/g; SAR(10 g) = 0.435 mW/g
Maximum value of SAR (measured) = 1.16 W/kg



0 dB = 1.16 W/kg

16 CDMA2000 BC1_RTAP 153.6_Front_1cm_Ch600

DUT: 340802

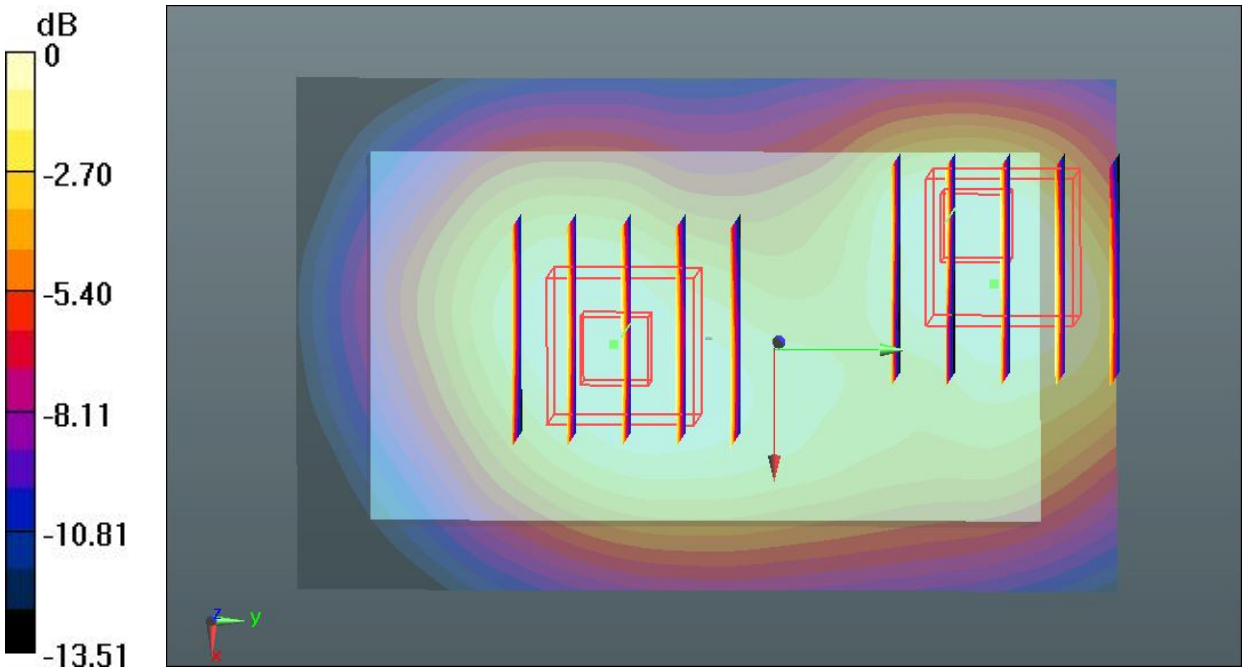
Communication System: CDMA2000; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1880 MHz; σ = 1.479 mho/m; ε_r = 53.835; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch600/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.18 W/kg

Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.095 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.552 mW/g
SAR(1 g) = 0.868 mW/g; SAR(10 g) = 0.484 mW/g
Maximum value of SAR (measured) = 1.20 W/kg

Ch600/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.095 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.184 mW/g
SAR(1 g) = 0.787 mW/g; SAR(10 g) = 0.499 mW/g
Maximum value of SAR (measured) = 0.988 W/kg



0 dB = 0.988 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

17 CDMA2000 BC1_RTAP 153.6_Front_1cm_Ch1175

DUT: 340802

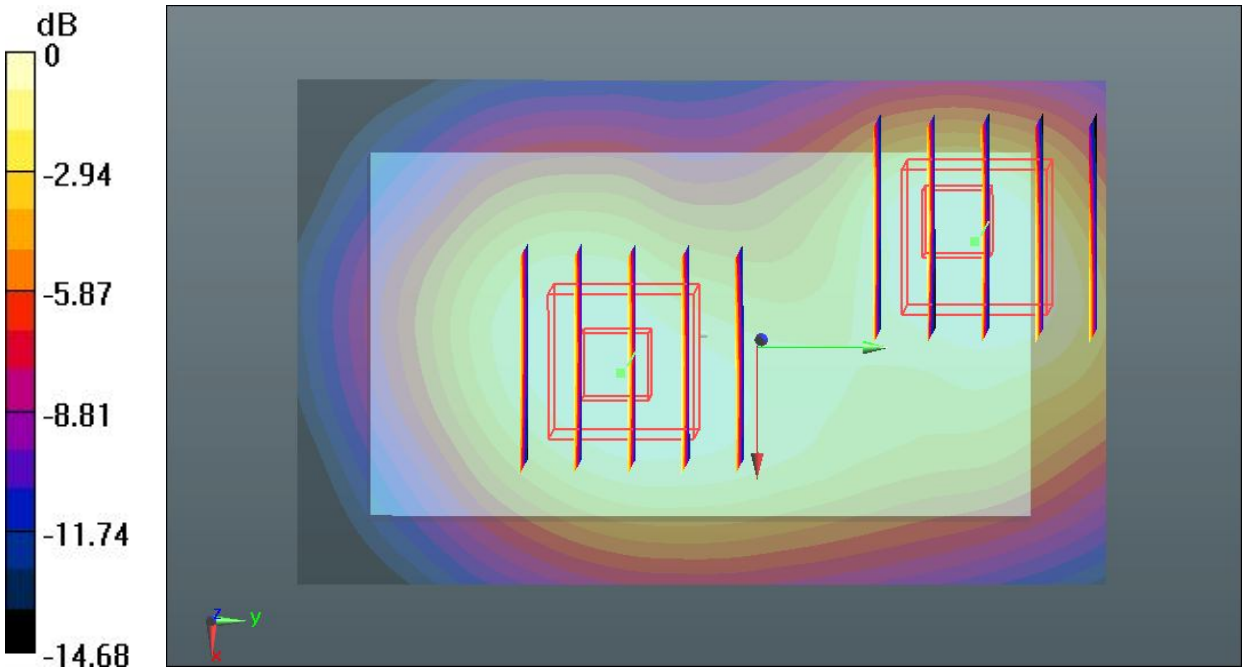
Communication System: CDMA2000; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1909 MHz; σ = 1.51 mho/m; ε_r = 53.822; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1175/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.33 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.399 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.756 mW/g
SAR(1 g) = 0.983 mW/g; SAR(10 g) = 0.538 mW/g
Maximum value of SAR (measured) = 1.35 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.399 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.369 mW/g
SAR(1 g) = 0.896 mW/g; SAR(10 g) = 0.560 mW/g
Maximum value of SAR (measured) = 1.14 W/kg



0 dB = 1.14 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

18 CDMA2000 BC1_RTAP 153.6_Back_1cm_Ch600

DUT: 340802

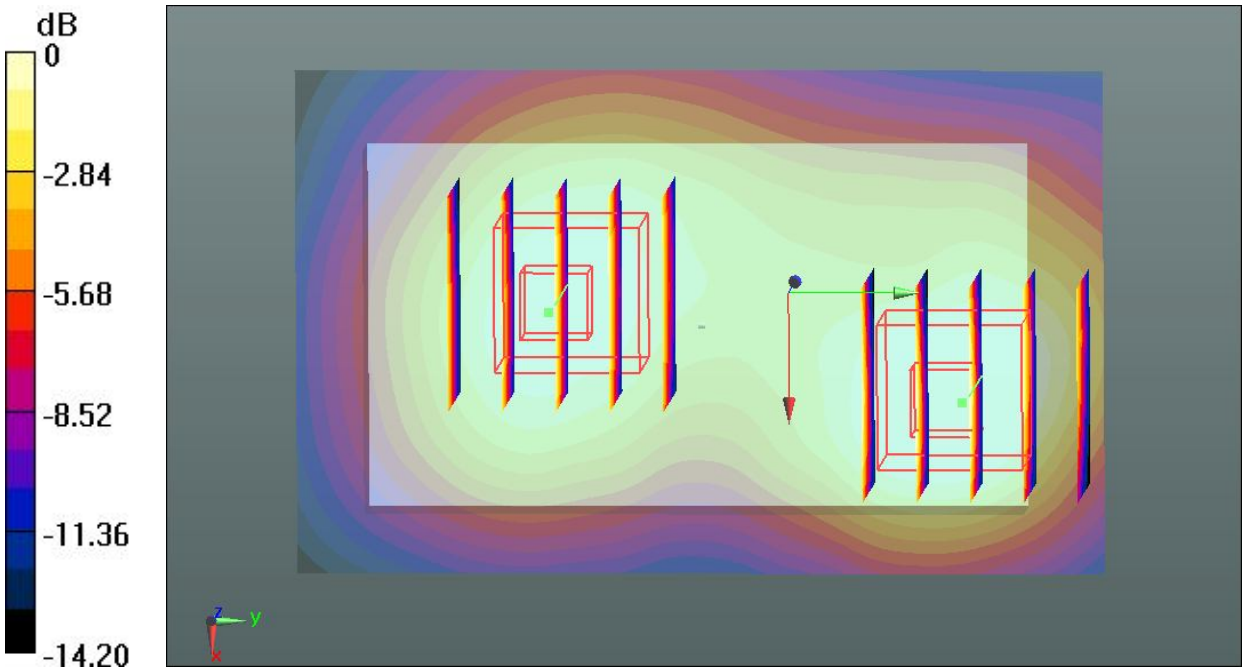
Communication System: CDMA2000; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1880 MHz; σ = 1.479 mho/m; ε_r = 53.835; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch600/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.40 W/kg

Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.111 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.771 mW/g
SAR(1 g) = 1.000 mW/g; SAR(10 g) = 0.551 mW/g
Maximum value of SAR (measured) = 1.37 W/kg

Ch600/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.111 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.203 mW/g
SAR(1 g) = 0.796 mW/g; SAR(10 g) = 0.502 mW/g
Maximum value of SAR (measured) = 1.02 W/kg



0 dB = 1.02 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

19 CDMA2000 BC1_RTAP 153.6_Back_1cm_Ch1175

DUT: 340802

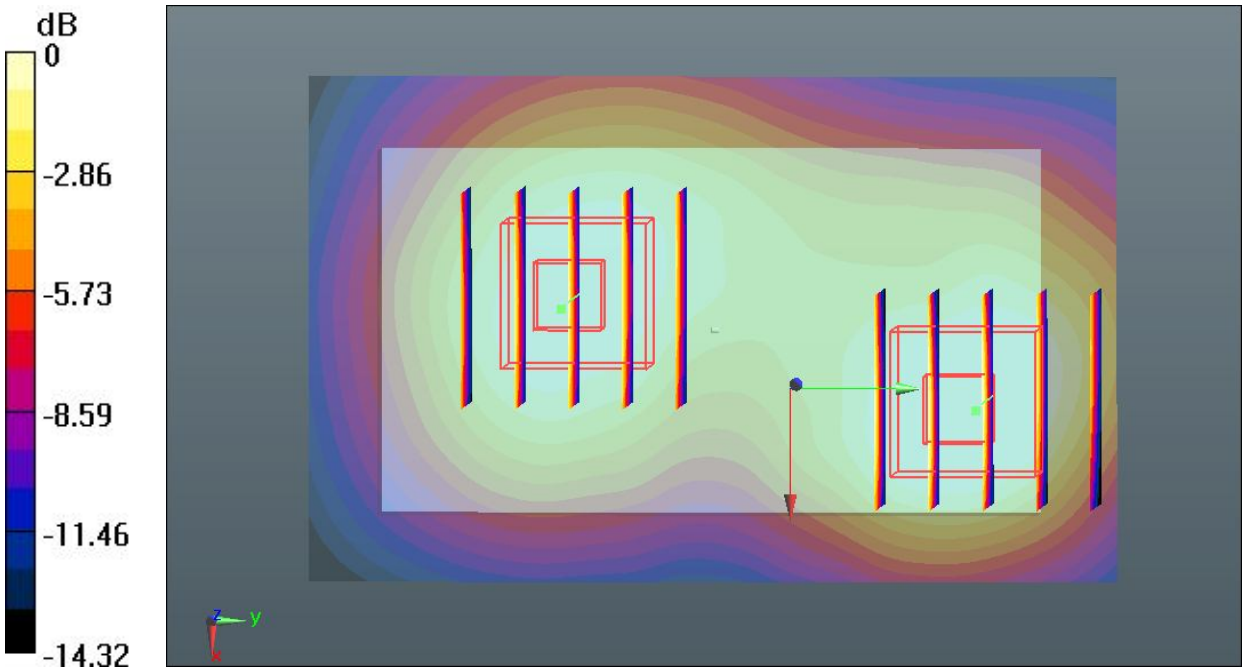
Communication System: CDMA2000; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1909 MHz; σ = 1.51 mho/m; ε_r = 53.822; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1175/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.49 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.665 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.888 mW/g
SAR(1 g) = 1.060 mW/g; SAR(10 g) = 0.574 mW/g
Maximum value of SAR (measured) = 1.45 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.665 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.298 mW/g
SAR(1 g) = 0.842 mW/g; SAR(10 g) = 0.524 mW/g
Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.08 W/kg

22 CDMA2000 BC1_RTAP 153.6_Back_1cm_Ch1175_Repeat SAR

DUT: 340802

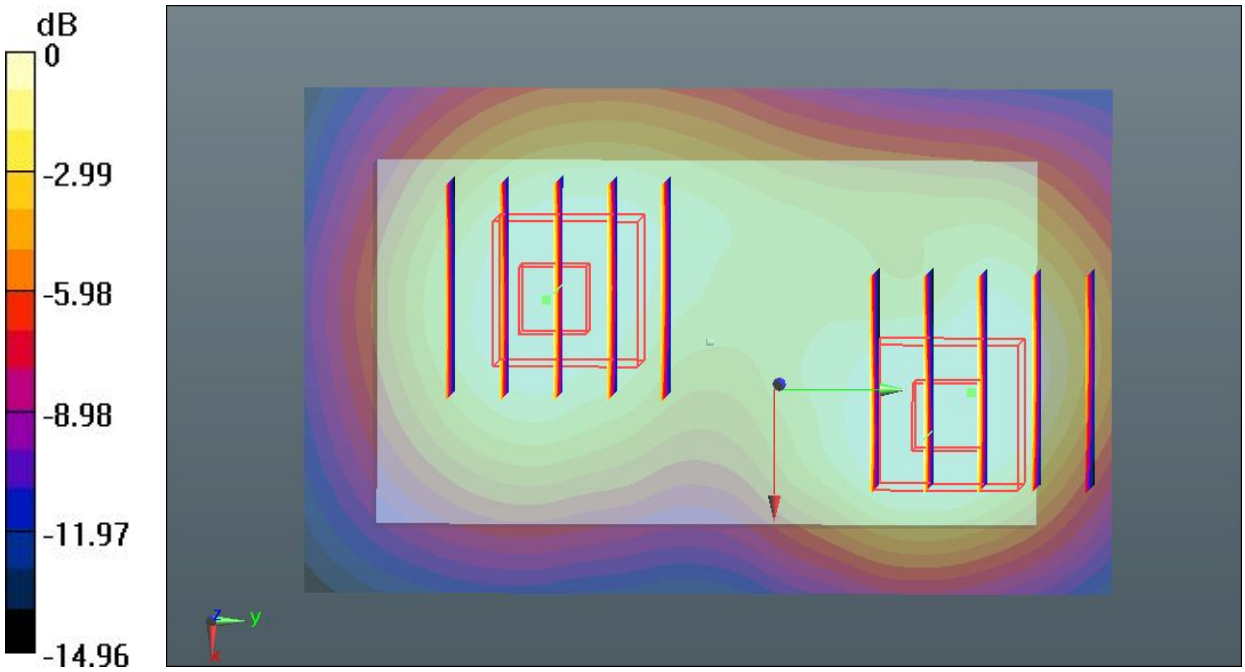
Communication System: CDMA2000; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1909 MHz; σ = 1.51 mho/m; ε_r = 53.822; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1175/Area Scan (51x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.45 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.614 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.823 mW/g
SAR(1 g) = 1.020 mW/g; SAR(10 g) = 0.553 mW/g
Maximum value of SAR (measured) = 1.35 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.614 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.243 mW/g
SAR(1 g) = 0.808 mW/g; SAR(10 g) = 0.504 mW/g
Maximum value of SAR (measured) = 1.04 W/kg



0 dB = 1.04 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

20 CDMA2000 BC1_RTAP 153.6_Top Side_1cm_Ch600

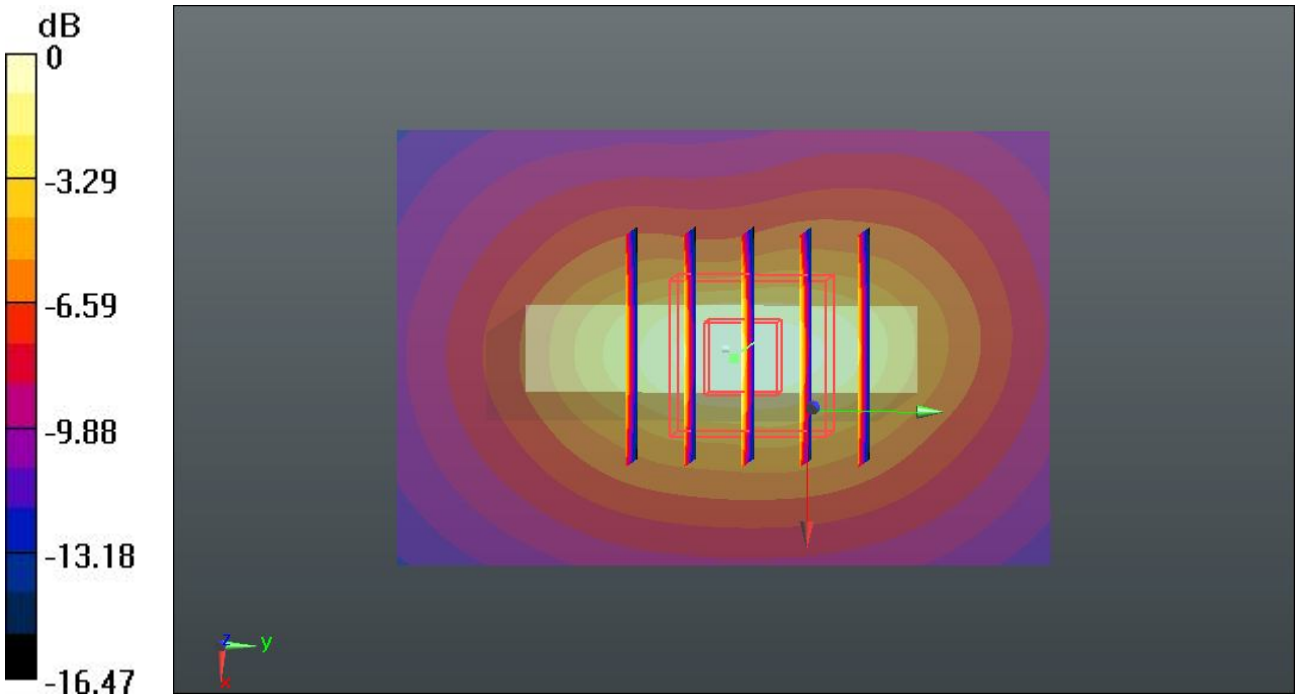
DUT: 340802

Communication System: CDMA2000; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1880 MHz; σ = 1.479 mho/m; ε_r = 53.835; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch600/Area Scan (41x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.08 W/kg

Ch600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.226 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.281 mW/g
SAR(1 g) = 0.748 mW/g; SAR(10 g) = 0.397 mW/g
Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 30.05.2013

21 CDMA2000 BC1_RTAP 153.6_Top Side_1cm_Ch1175

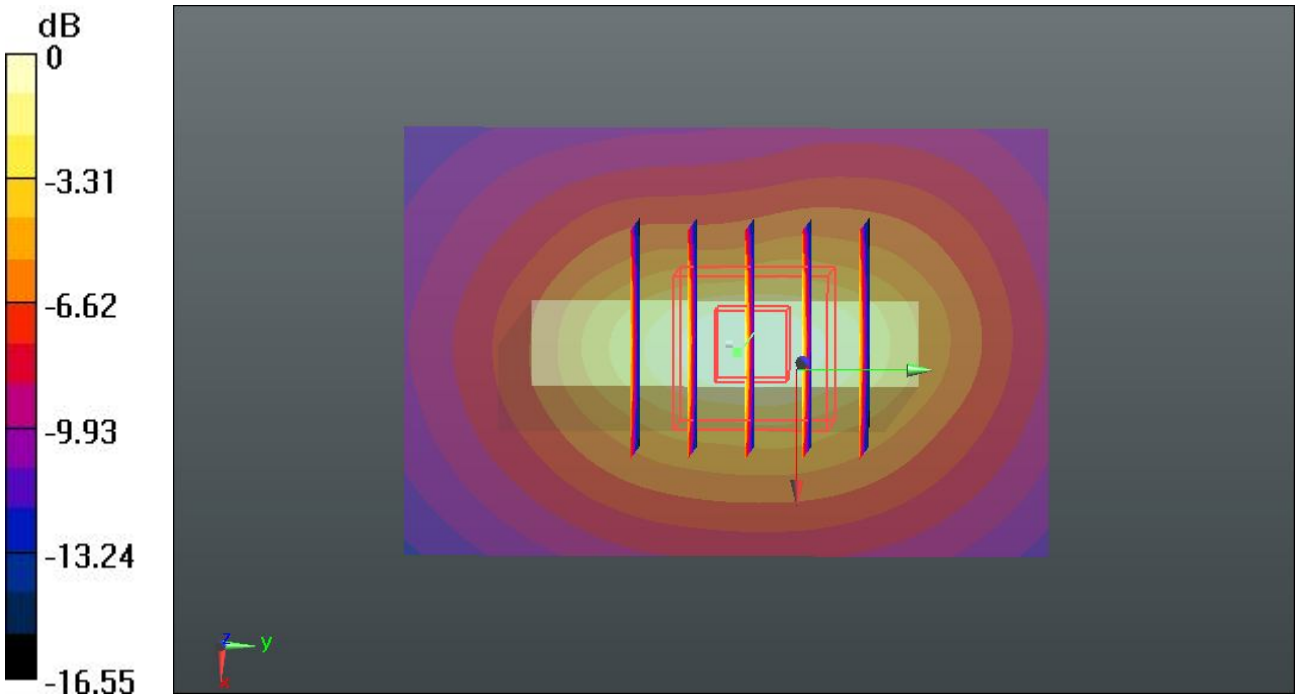
DUT: 340802

Communication System: CDMA2000; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130530 Medium parameters used: f = 1909 MHz; σ = 1.51 mho/m; ε_r = 53.822; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1175/Area Scan (41x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.17 W/kg

Ch1175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.143 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.398 mW/g
SAR(1 g) = 0.817 mW/g; SAR(10 g) = 0.435 mW/g
Maximum value of SAR (measured) = 1.14 W/kg



0 dB = 1.14 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 31.05.2013

23 WLAN2.4G_802.11b_Front_1cm_Ch1

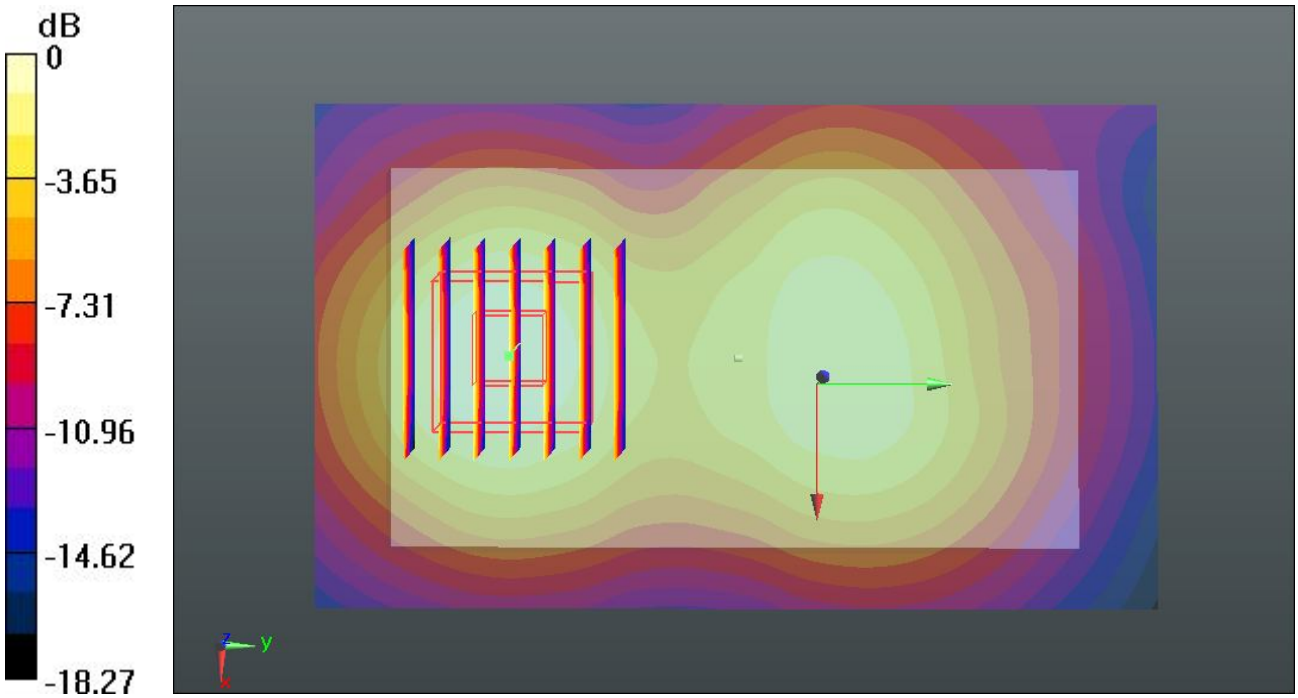
DUT: 340802

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130531 Medium parameters used: f = 2412 MHz; σ = 1.87 mho/m; ε_r = 54.093; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1/Area Scan (61x101x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.265 W/kg

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.850 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.337 mW/g
SAR(1 g) = 0.187 mW/g; SAR(10 g) = 0.103 mW/g
Maximum value of SAR (measured) = 0.261 W/kg



0 dB = 0.261 W/kg

24 WLAN2.4G_802.11b_Back_1cm_Ch1

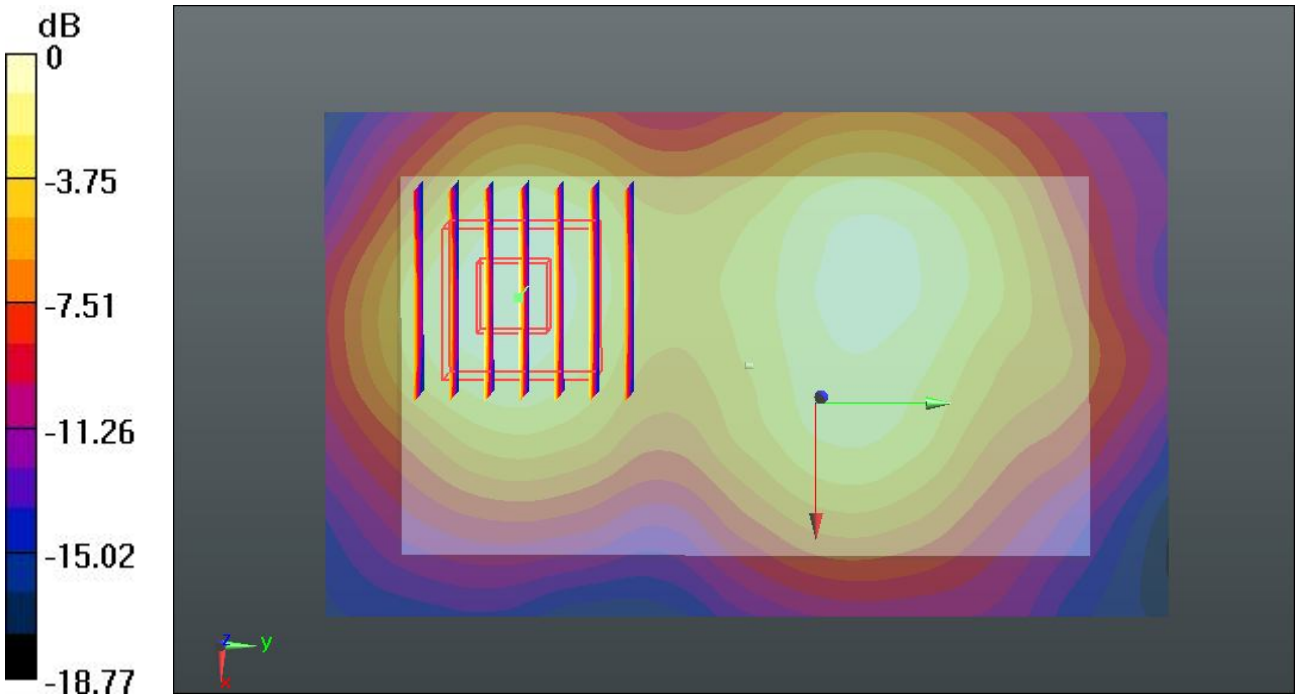
DUT: 340802

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130531 Medium parameters used: f = 2412 MHz; σ = 1.87 mho/m; ε_r = 54.093; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1/Area Scan (61x101x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.233 W/kg

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.048 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.309 mW/g
SAR(1 g) = 0.166 mW/g; SAR(10 g) = 0.090 mW/g
Maximum value of SAR (measured) = 0.233 W/kg



0 dB = 0.233 W/kg

26 WLAN2.4G_802.11b_Right Side_1cm_Ch1

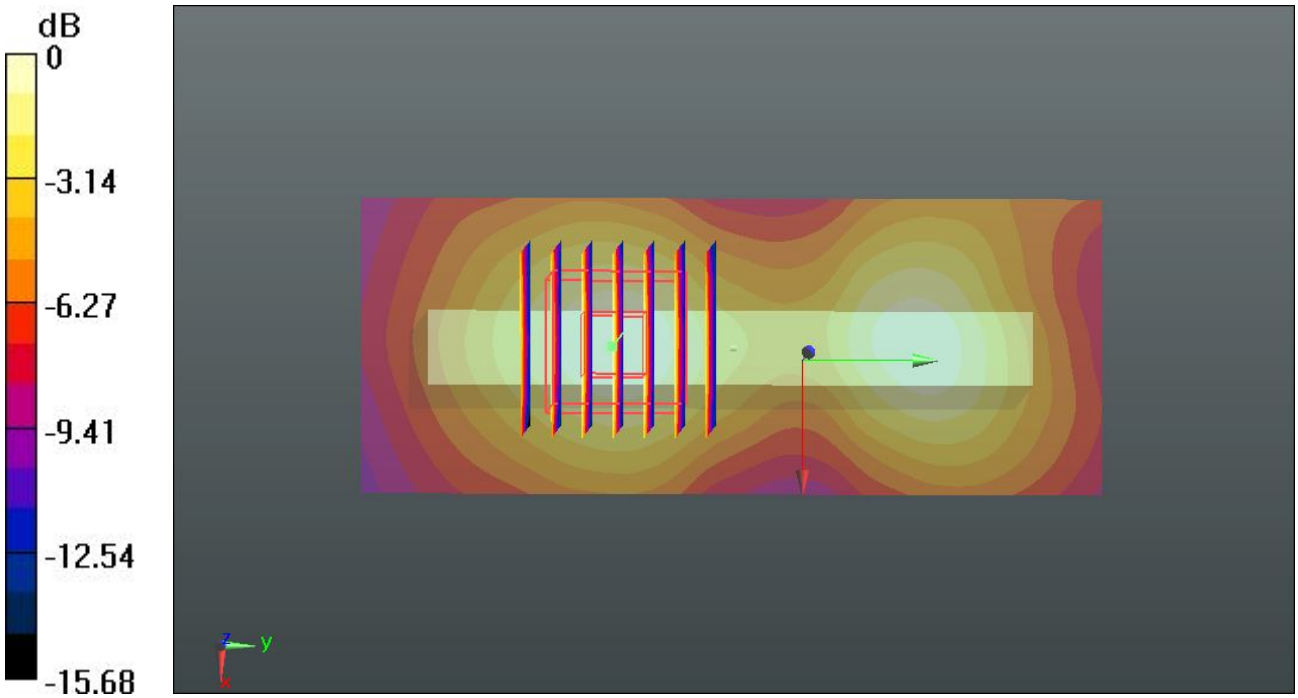
DUT: 340802

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130531 Medium parameters used: f = 2412 MHz; σ = 1.87 mho/m; ε_r = 54.093; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1/Area Scan (41x101x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.128 W/kg

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.225 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.171 mW/g
SAR(1 g) = 0.094 mW/g; SAR(10 g) = 0.052 mW/g
Maximum value of SAR (measured) = 0.132 W/kg



0 dB = 0.132 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 31.05.2013

27 WLAN2.4G_802.11b_Bottom Side_1cm_Ch1

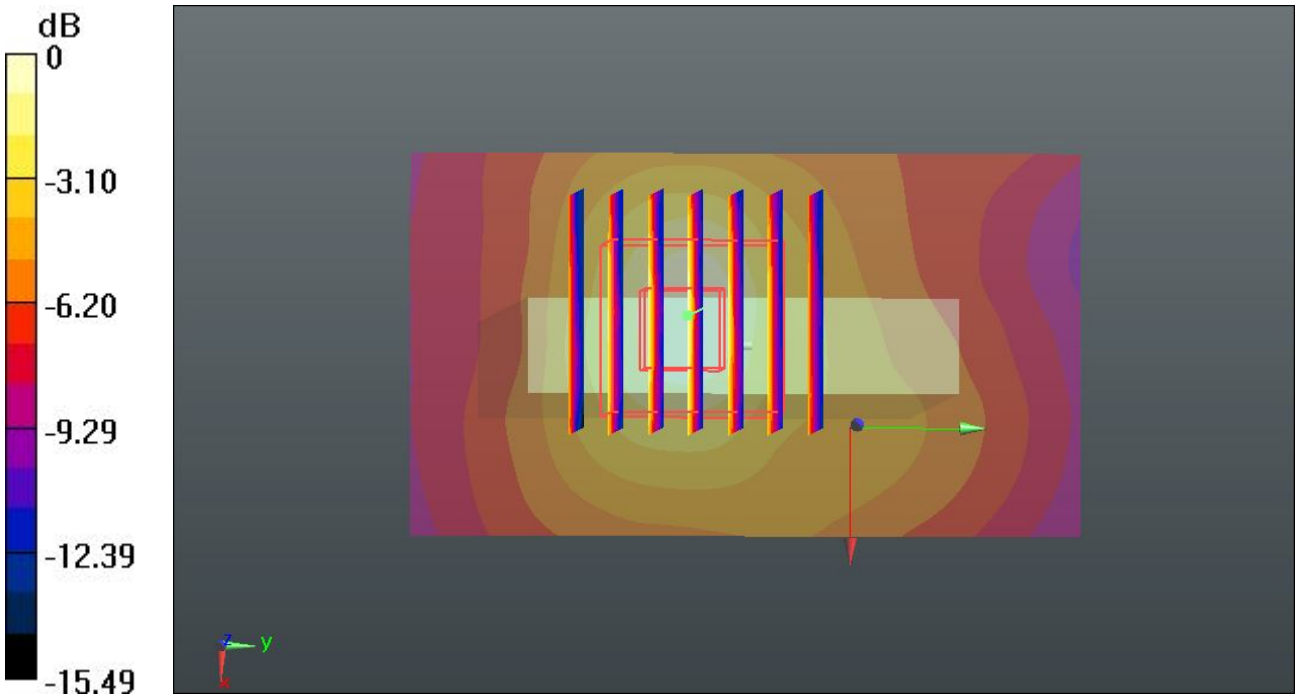
DUT: 340802

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130531 Medium parameters used: f = 2412 MHz; σ = 1.87 mho/m; ε_r = 54.093; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1/Area Scan (41x71x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.101 W/kg

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.443 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.136 mW/g
SAR(1 g) = 0.070 mW/g; SAR(10 g) = 0.036 mW/g
Maximum value of SAR (measured) = 0.102 W/kg



0 dB = 0.102 W/kg